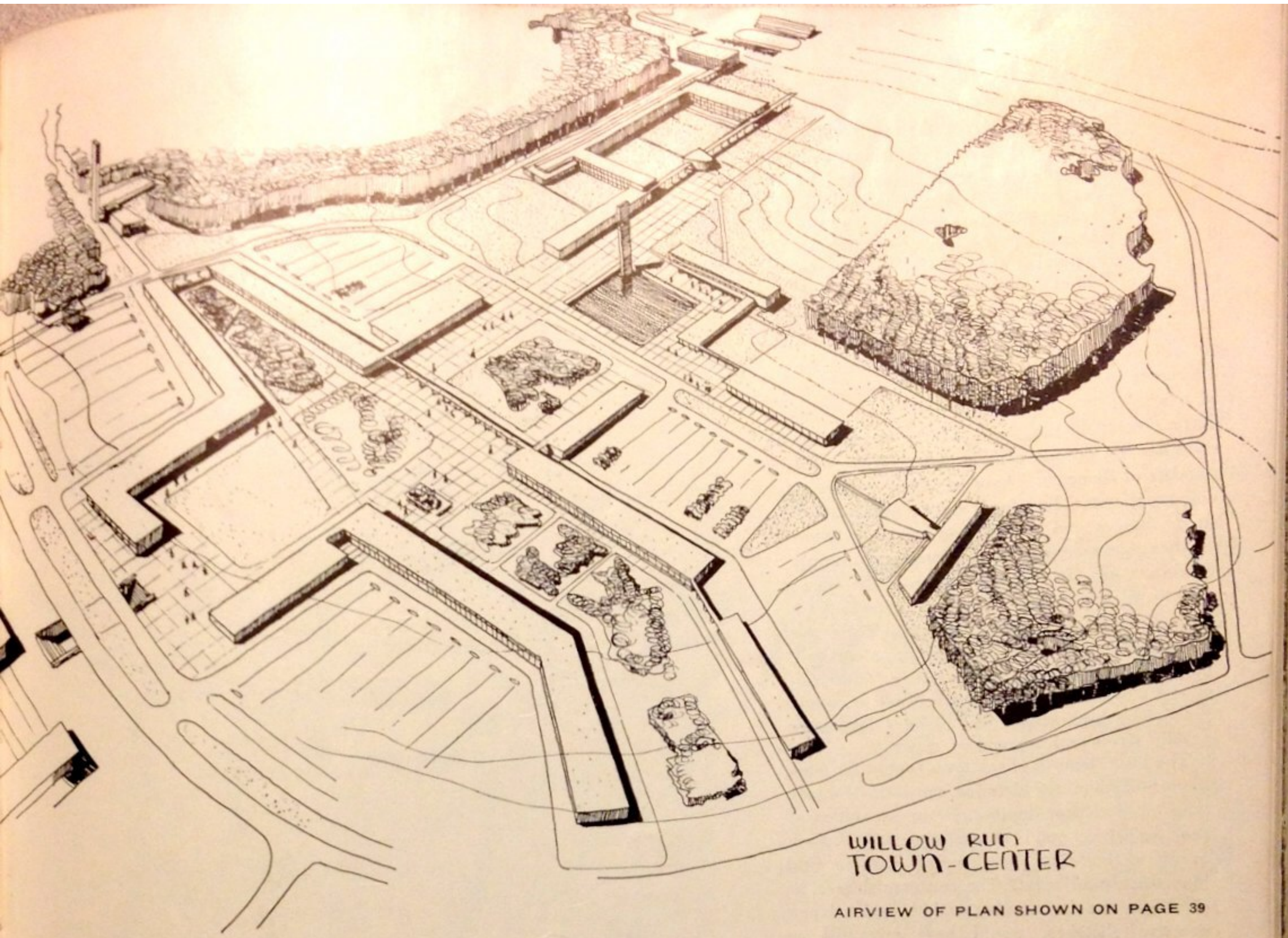


AIRVIEW OF PLAN SHOWN ON PAGE 39

THE TOWN OF WILLOW RUN

The town of Willow Run, illustrated and described in detail in these eighteen pages, does not exist and is not being built. What is more, it is not going to be built. Why then, does THE ARCHITECTURAL FORUM devote eighteen pages to it? Because Willow Run deals with the dwelling in its largest aspect, and because it accepts in a realistic and economical manner the existence of the automobile. And most significantly, because the plan establishes the level on which planners, builders, realtors and investors will have to compete in the postwar period. With every indication that conservative capital is looking to Building as an investment outlet, the single house or even a baker's dozen of them cannot match for safety the planned—or replanned—community which offers the maximum guarantee against premature obsolescence.

Willow Run was conceived as a model American community, designed to house the families of 6,000 aircraft workers. Located northeast of the town of Ypsilanti, and within easy reach of the giant bomber plant being operated by Ford, Willow Run was to have been more than a model city. It was to have been a force in the war production effort, providing workers for a plant desperately in need of them. Why the project ended up a total failure (unless the building of 2,500 temporary units could be called success) with the backing of the Union of Automobile Workers and the Federal Public Housing Authority, is a long and very involved story, one told so often it is not repeated here.

Willow Run was almost unique in that it was a city planned from scratch. Five groups of architects were given a large tract in the country on which to build five neighborhoods, each complete with houses, shops and a school. A sixth firm was appointed to design a town center, properly arranged for the convenience of both pedestrians and motorists. Thus the project became a proving ground for the most advanced ideas on housing and city planning, and these ideas were subjected to endless critical scrutiny until an integrated pattern emerged.

These pages show the civic center and three of the proposed neighborhood units. They offer the best guide to postwar planning we have yet produced.

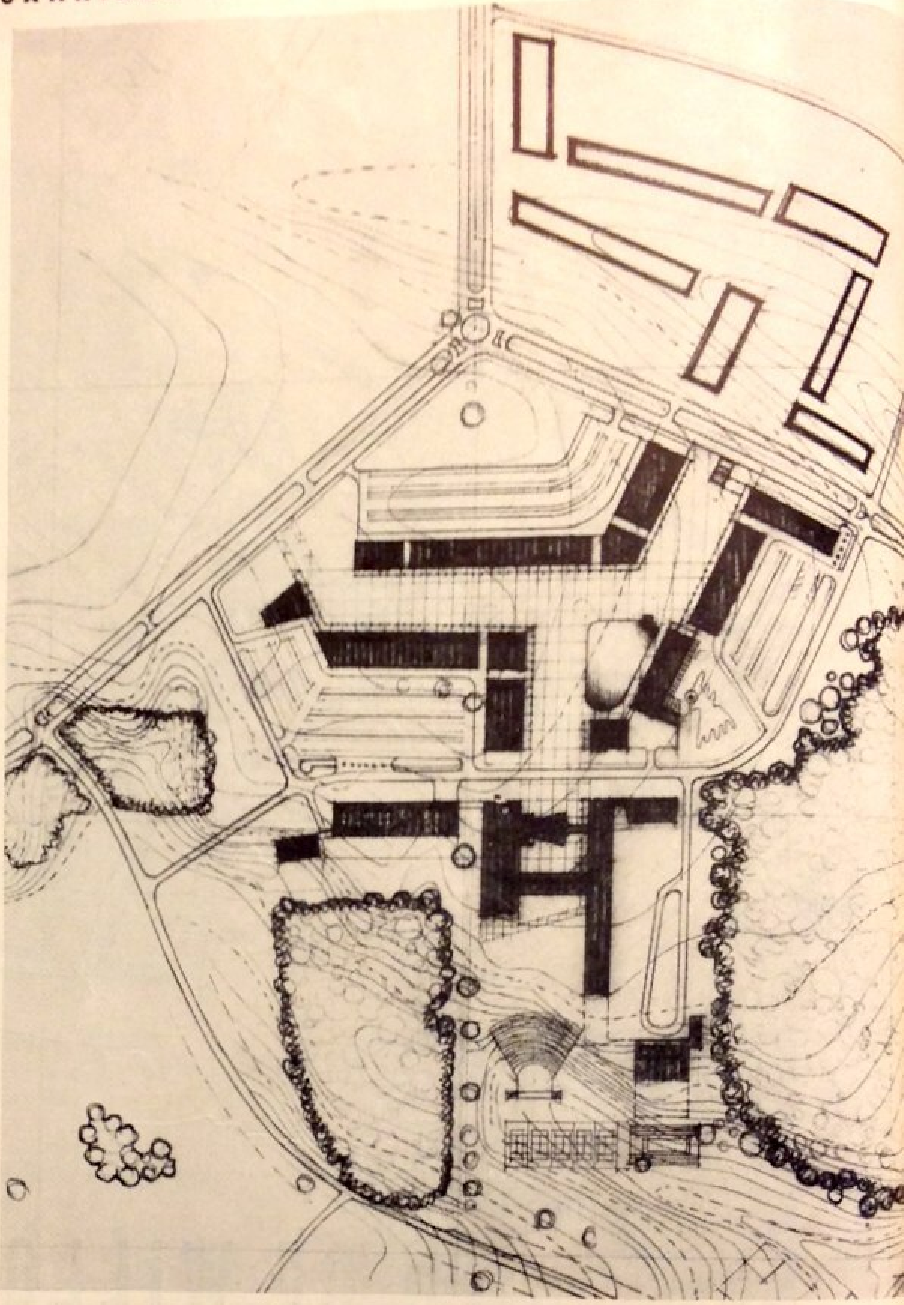
WILLOW RUN TOWN CENTER

SAARINEN & SWANSON, ARCHITECTS

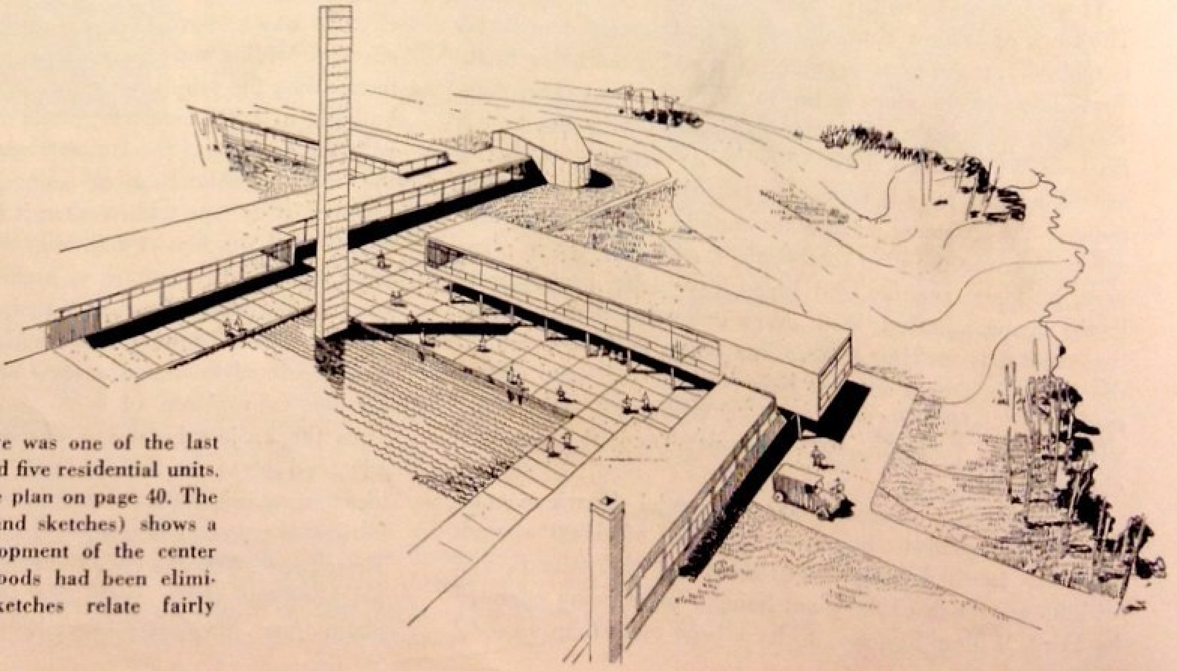
Like the architects who designed the five residential neighborhoods, the firm of Saarinen and Swanson, in its plan for a town center, had to provide facilities for the community to be built at once and space for future additions as the otwn to its maximum population of 6,000 families. Due to the number of factors involved in the planning of Willow Run, these town center plans were in a continual state of change until the day the project was abandoned. Consequently it is not always possible to relate a given scheme for the center to any of the plans for the community as a whole.

During most of the stages of the design, the complete town center contained roughly the same number of elements. There was to be a commercial group, providing food, variety merchandise, drugs, barber and beauty shop service, a tailor-cleaner, shoe repair shop, clothing, furniture, hardware, etc. In the initial stage of the town's growth many of these facilities were to have been provided by near-by Ypsilanti. There was to have been a municipal center, with a city hall, post office and fire and police station. Other services included a bus station, utilities office and hotel. The high school was planned for use as a fully developed community center.

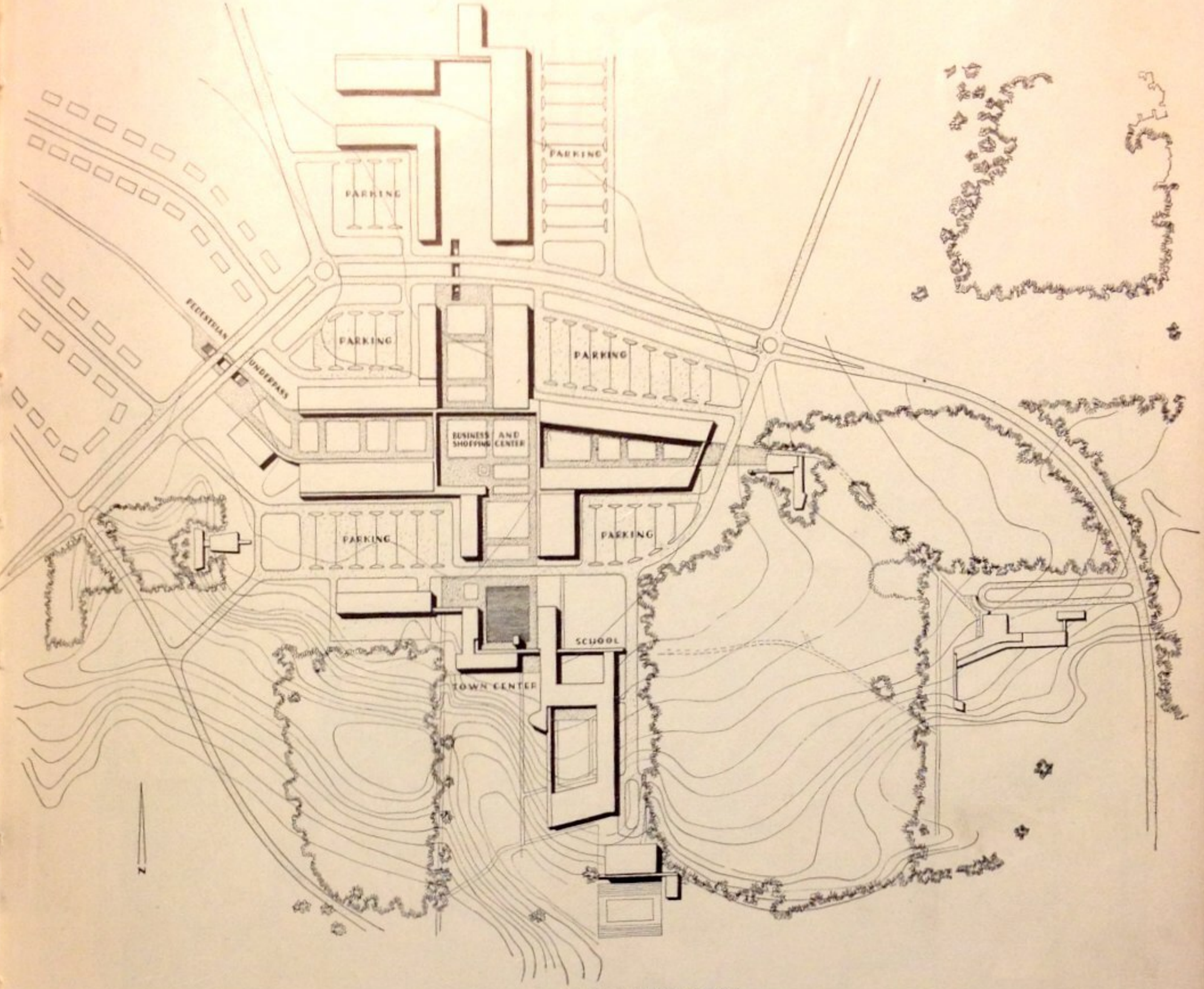
The basic feature of the town center, far more important than the detailed provisions for one type of service or another, is the separation of the pedestrian and automobile traffic. Each group of buildings has its own parking field immediately adjacent. The commercial area, as shown in the facing plan and the related perspective sketches, would have presented an appearance vastly different from and superior to the usual congested shopping street. A real advantage of such a scheme, apart from the obvious amenities, would have been stable tax and rental values, since there is no possibility of undesirable encroachment.



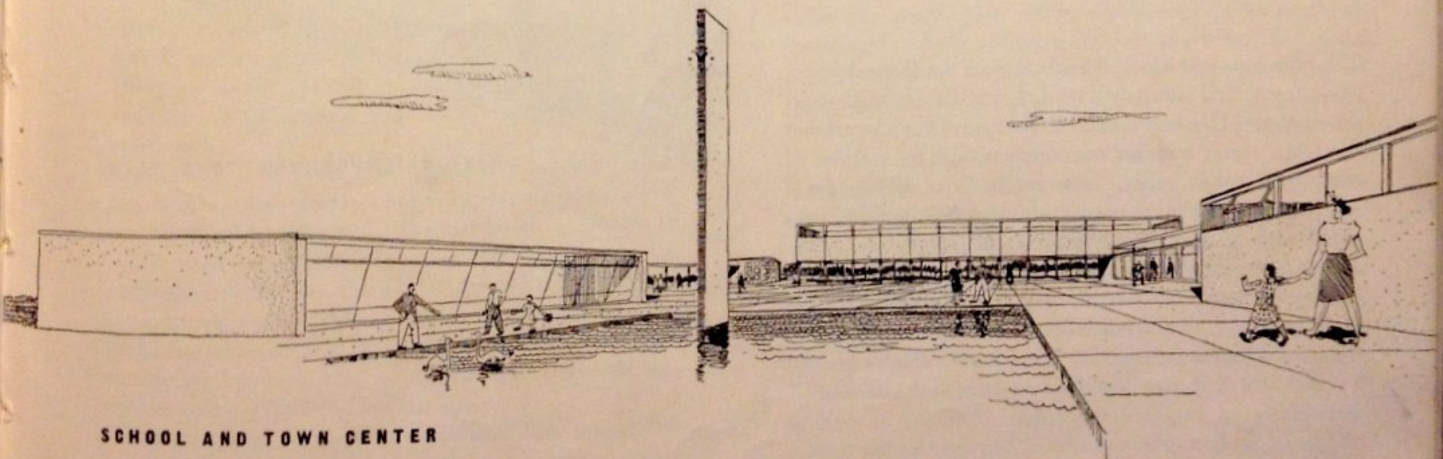
PRELIMINARY STUDY



The preliminary study above was one of the last made while the town still had five residential units. This stage can be seen in the plan on page 40. The later study (opposite page and sketches) shows a plan for the ultimate development of the center after two of the neighborhoods had been eliminated. The perspective sketches relate fairly closely to this scheme.

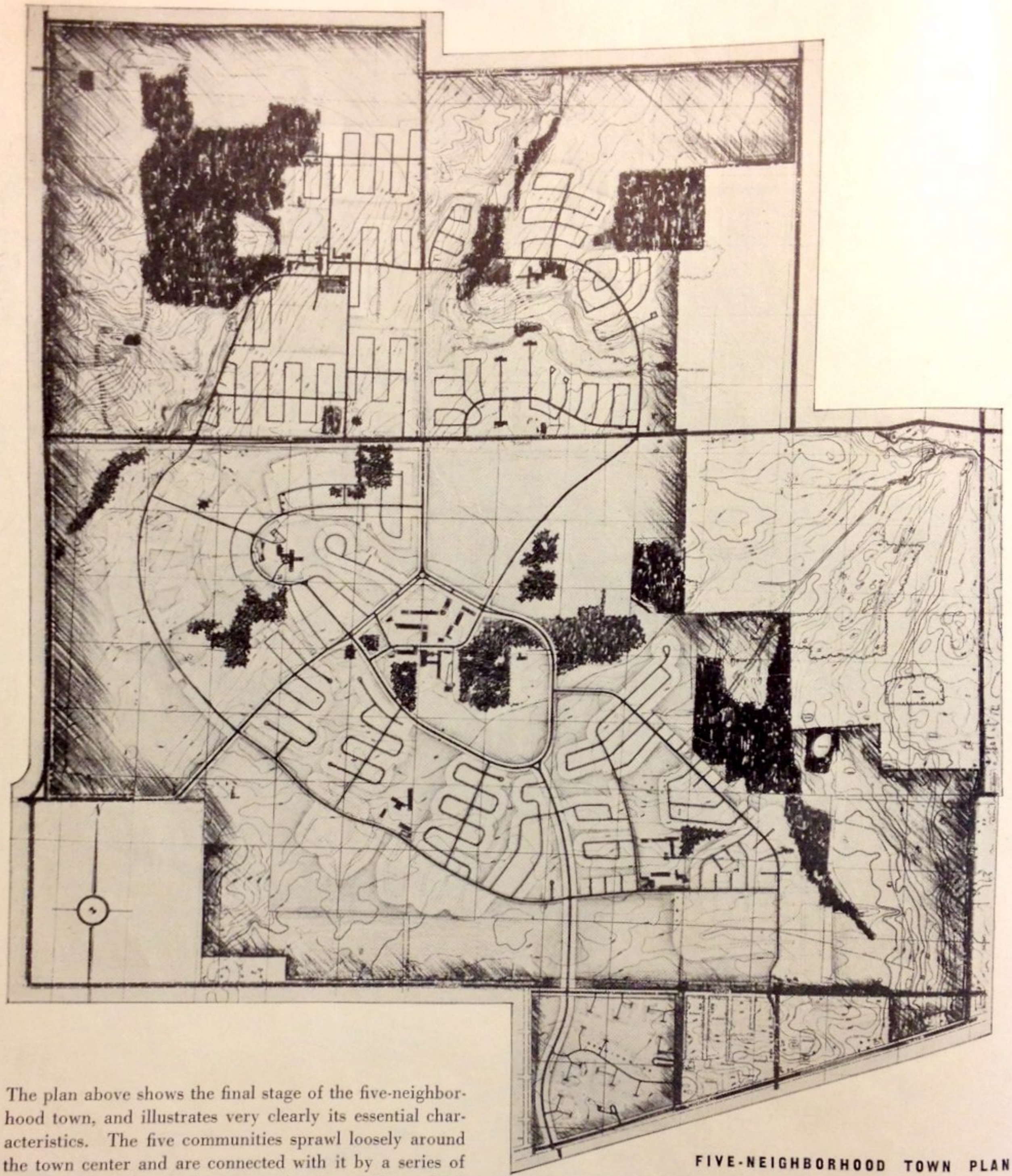


PLAN OF COMMUNITY CENTER FOR 3 NEIGHBORHOODS



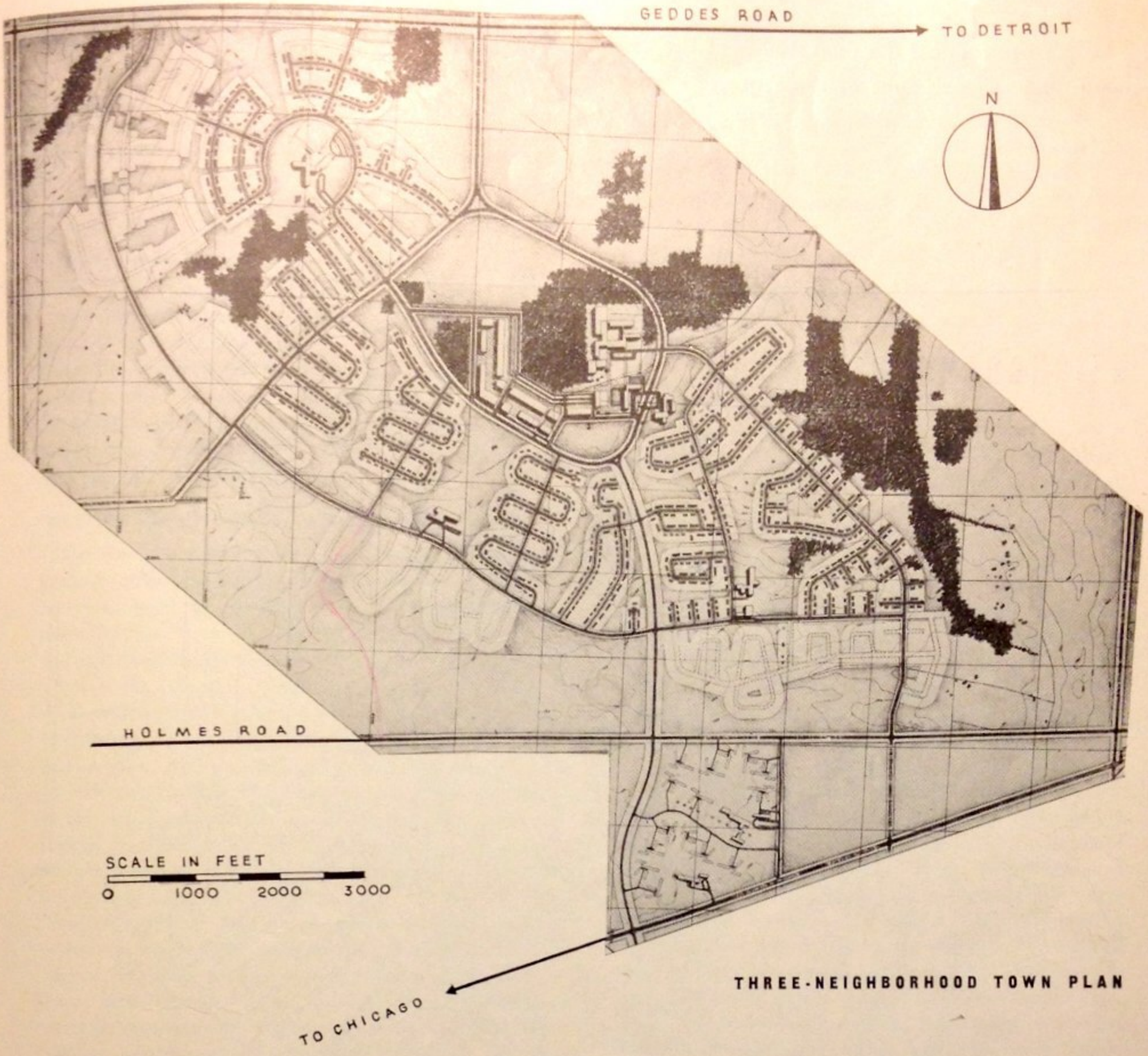
SCHOOL AND TOWN CENTER

TOWN OF WILLOW RUN



FIVE-NEIGHBORHOOD TOWN PLAN

The plan above shows the final stage of the five-neighborhood town, and illustrates very clearly its essential characteristics. The five communities sprawl loosely around the town center and are connected with it by a series of peripheral roads. Each community is a self-contained unit, with an ultimate population of 1,200 families, provided with its own school and with shops for daily necessities. A greenbelt surrounds the entire town, and most of the architects worked out some method of allowing the main greenbelt to filter through their housing groups to the small community centers. The schools, which provided a social as well as architectural center for each community, were designed to serve the needs of adults as well as children. In fact, during the wartime stage of the project



THREE-NEIGHBORHOOD TOWN PLAN

each school was to be a meeting hall, entertainment center, church, and anything else the inhabitants might require. There was ample room in each neighborhood center for additions to the school and for new, special purpose buildings.

A glance at both town plans shows that a fairly close agreement on basic features of the site layout was reached by the different architects. The cul-de-sac is present in almost all of the schemes, but it has been subordinated in favor of the long loop which is split down the middle by a connecting road. This road generally hooks into the peripheral road so that the traffic requirements of each community are taken care of without disrupting the important routes of pedestrian circulation.

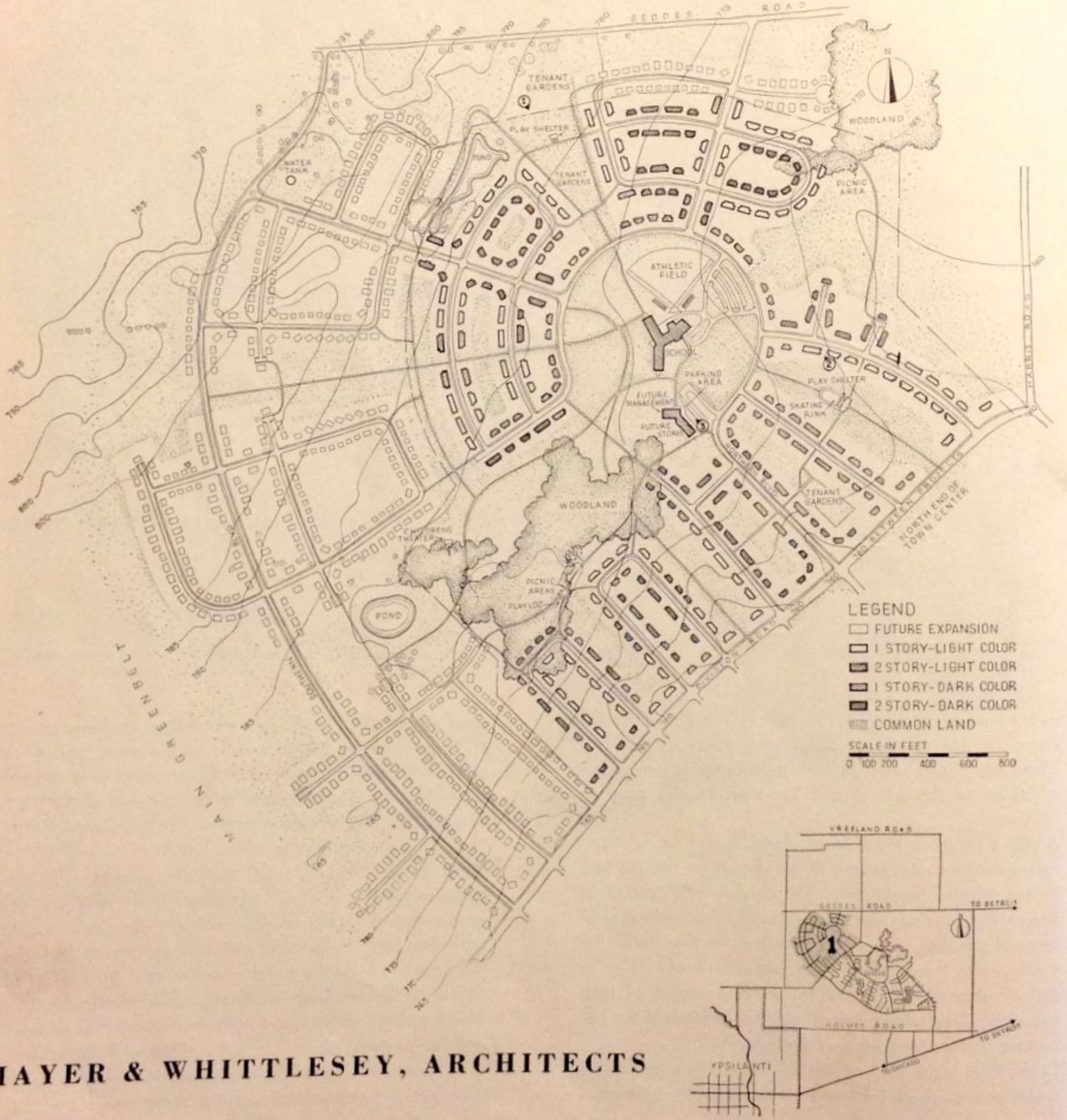
In the final stage of the town of Willow Run two of the communities—those farthest from the main town center—were eliminated. The center was shifted to the southeast to bring it closer to the middle of the town, and some modifications in the community plans were produced by this shift. In the community at the west end of the town, for instance, the circular common was reoriented so that it no longer opened to the town center.

Even in its reduced state, the town might still have approached the original objectives. It retained the protective greenbelt, the excellent circulation system with its attendant safety features and the attractively arranged houses. But even the reduced town went by the boards. Whether the hundreds of thousands of dollars spent on the drawings were wasted will depend to a large extent on the postwar planner, for the town of Willow Run is the most workable and most human guide to the integrated community produced to date.

This page introduces the final studies of the site plans and housing for the three Willow Run neighborhood units. Descriptions of these projects have been provided by the architects.

1. Mayer and Whittlesey, Architects pages 42-46
2. Skidmore, Owings, Merrill and Andrews, Architects and Engineers pages 47-51
3. Stonorov and Kahn, Architects pages 52-54

NEIGHBORHOOD UNIT 1.



MAYER & WHITTLESEY, ARCHITECTS

"SITE PLAN LIMITATIONS

1. **Total cost of site development** not to exceed $900 per dwelling unit.

2. **Length of water mains** not to exceed 50 feet per family, including site and approach mains.

3. **House Connections.** Structures served by main in right of way may not be set back more than 25 feet. Houses served by mains elsewhere may not be more than 50 feet from them.

4. **Building Schedule.** Present development: 700 families, housed approximately as follows:

85 one-story twin houses. 18 one-story rows. 143 two-story twins. 43 two-story rows.

Future development: 500 families in 362 one-story, single-family units. 138 one-story, single-family units.

All the above dwelling units, both immediate and future, to be so planned that 6% have one bedroom, 56.5% have two bedrooms and 37.5% have three bedrooms.

"MEETING THE SITE PLAN LIMITATIONS

"Land cost was not a factor in developing the site, but grading and landscaping were. The decisive factors, however, were the utilities, roads and sidewalks. To assemble these into the most desirable living pattern and still keep within the budget, was the problem.

"This is the procedure followed in arriving at the desired pattern: first, the houses were laid out in a ribbon, obviously the most economical as regards both roads and utilities. This worked out to an average length of 19 feet per family. The ribbon plan, of course, was merely a preliminary yardstick, since it had no application to the site problem. Next the houses were arranged in long loops: at this stage the minimum possible road length was increased by 20 per cent.

"Moreover, when these loops were assembled into a community pattern, the road length again had to be increased, this time to 42 per cent over the original ribbon. There were several reasons for this loss in efficiency: street intersections accounted for about half, and the balance was caused by circulating roads, by unused frontage facing the common, and by openings between houses for group parking, for pedestrian walks and to let the greenbelt come through. It was found that whatever the manner in which the loops were combined, if the above amenities were maintained, there was apparently no way of reducing the loss of 42 per cent. In consequence this figure was used as a base for evaluating the economy of the final site plan designs.

"Our decision to use the long loop rather than the cul-de-sac was very largely based on economy of the former, established after a long series of comparisons. These were among the most significant findings:

1. Road surfacing and length of utilities were not necessarily a direct function of lot frontage.

2. The short cul-de-sac, say 250 to 350 feet, caused an efficiency loss of more than 20 per cent. Under the budget it was not possible to pay for the added road and utilities and still afford amenities considered necessary.

3. Therefore, length was a requisite. We had to work deeply into the site wherever possible. As soon as lengths went over 350 feet, the loop showed advantages over the cul-de-sac. The road width on a long cul-de-sac has to be greater than that of a comparable loop, and the loop showed similar savings in the water mains.

4. Where streets were under 350 feet, the cul-de-sac was generally selected, as it is more economical than the short loop. The cul-de-sac head had to be studied carefully, as added expenses could creep in. A head serving eight lots, for instance, was found to require 50 per cent more road surface per family than one with but four.

"SITE PLAN OBJECTIVES

1. **Pedestrian Safety.** The UAW was strongly in favor of a 100 per cent "Radburn plan," i.e., the superblock system by which pedestrian and vehicular circulation are entirely separated, with kitchens facing the service roads and living rooms facing lawns and pedestrian paths. We were in agreement with the safety objectives, but not the method, and these arguments were finally accepted: (a) neither side of the house enjoys privacy, (b) visitors by car must enter through the service side and kitchen, (c) mothers control children from the kitchen, hence children in the "Radburn plan" tend to play in the service streets, (d) some people favor the living room-on-street scheme, favoring the social rather than purely service development of the street, (e) the 100 per cent cul-de-sac system produces a giant superblock, complicating vehicular circulation, and (f) this system is less economical than the long loop achieved by connecting the heads of each pair of culs-de sac.

"The developed site plan had elements of both systems. There were no service roads or culs-de-sac used purely as such. Long loops stemming from the main roads create blocks free of through traffic. Pedestrians can safely cross these loop streets to the common greenways leading from all parts of the site to its center and to the main town center. The greenways filter in through long loops. Driveways do not back out on intersections or main roads. Where houses do face a main road, their driveways enter around the corner from the side street. The final design was one which would prepare a child to some extent for the safety problems inherent in older community plans.

2. **Lot Layout** The requirement that lots be arranged to permit their ultimate sale presented no serious problems. Careful arrangement of drying yards, parking spaces and driveways was needed to observe possible future property rights and to provide reasonable lot sizes at corners.

3. **Coal delivery by chute** brought up plenty of problems, since utility rooms adjoin kitchens, which were often placed at the rear. It was necessary to study each yard type at large scale to develop the required solutions.

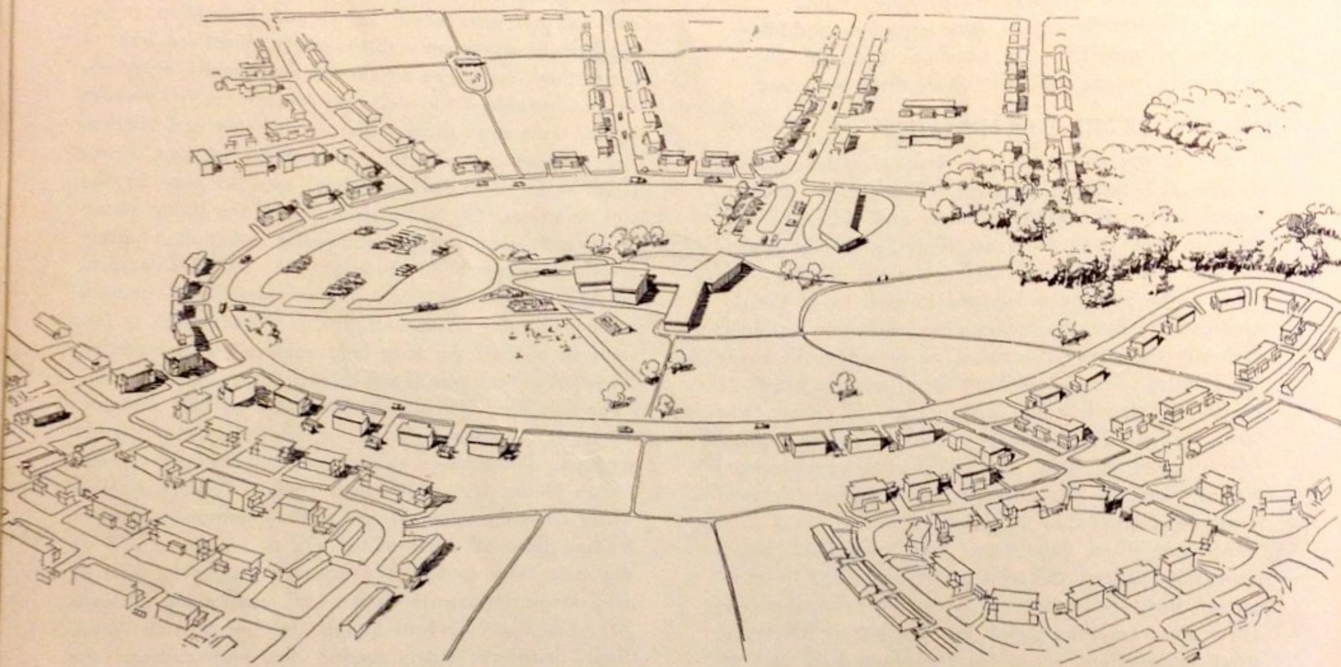
4. **The objective of 100 per cent parking** included a 40-foot stub for each house, the theory being that garages or carports might someday be built on the rear half of the stubs. One consequence was that the laundry yards, originally designed to fit between the houses, were pushed to the rear. The requirement also seemed unwise because of the dust problems it created, since concrete was too expensive to use and bituminous soil stabilizers were not available.

TOWN OF WILLOW RUN: NEIGHBORHOOD UNIT 1.

5. Laundry Drying Yards. This has already been discussed above. Placing the yards between buildings would have given accessibility without interference with gardens and view.

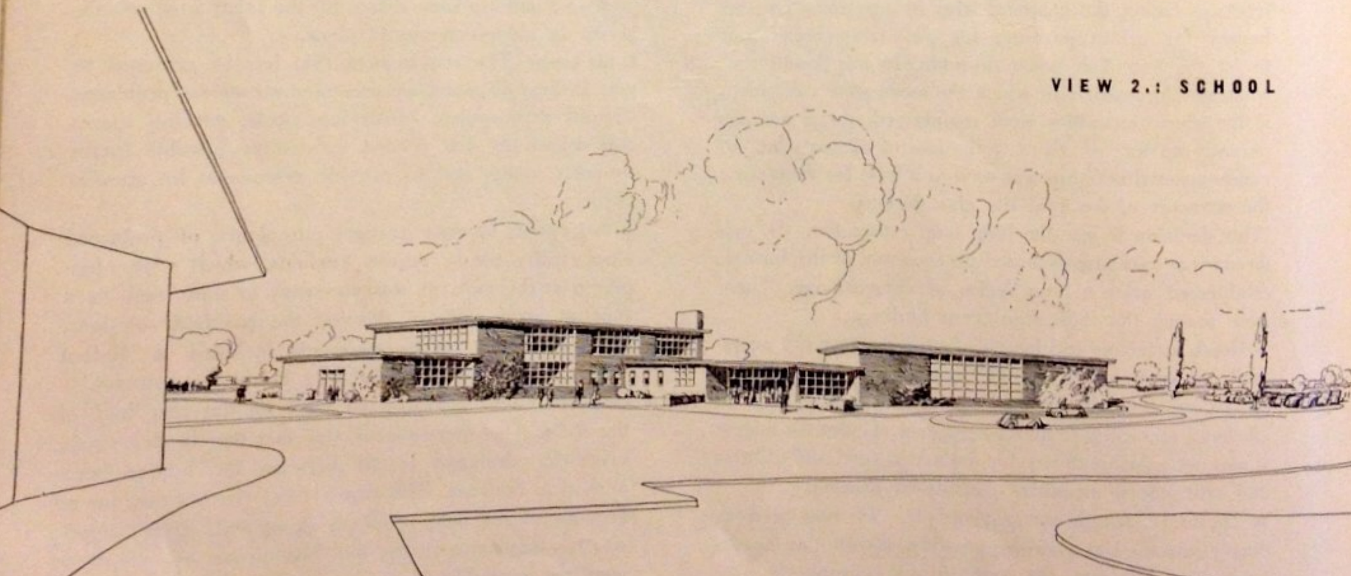
6. Greenbelt Infiltration. A superblock surrounded by a greenbelt, and composed entirely of cul-de-sac streets, permits full penetration of residential areas by the greenbelt. Our plan developed three major entries for the greenbelt, carrying it through to the community center, with minor infiltrations providing rear path circulation between the loops. Ease of vehicular circulation is maintained by drawing the various sections of the community to a main circulation loop surrounding the common.

7. Location of Community Center. Ease of pedestrian traffic between the community center and the main town center was considered of paramount importance. The original site plan solution opened the main circulation loop towards the town center rather than to the greenbelt. This can be seen on page 40. When later reduced to three communities, the town center was shifted radically. At the same time, the belated announcement of the flight course of the Willow Run cargo planes made it necessary to move a great many houses out of the



VIEW 1. OF PLAN ON PAGE 42

VIEW 2.: SCHOOL

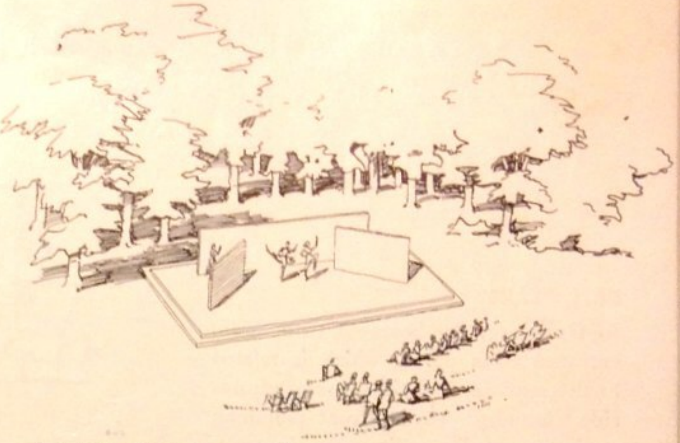


northeast corner of the site. This meant reversing the main circulation loop to give free pedestrian access to the community center from a majority of the houses. Parking at the community center is so arranged that movement on foot between the buildings is not obstructed. These buildings include a grade school, a nursery, a clinic, small play yard and offices for the management.

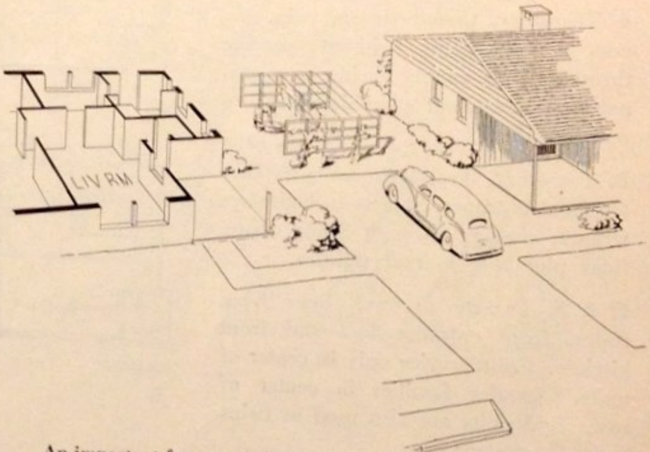
UNIT PLANS

"Minimum room sizes were fixed: the area for the main bedroom was about 130 sq. ft. Living room areas were 160 sq. ft. for the one-bedroom unit, 180 and 195 sq. ft. for the two- and three-bedroom dwellings. Utility rooms had to be large enough for storage and a well-lighted laundry. Coal delivery and ash removal had to work directly to the outside. It was considered desirable to keep the dining space out of the living room—which meant putting it in the kitchen. The kitchen was not to be used for through circulation. Garbage containers out of doors were to be easily reached from the kitchen, and concealed from view.

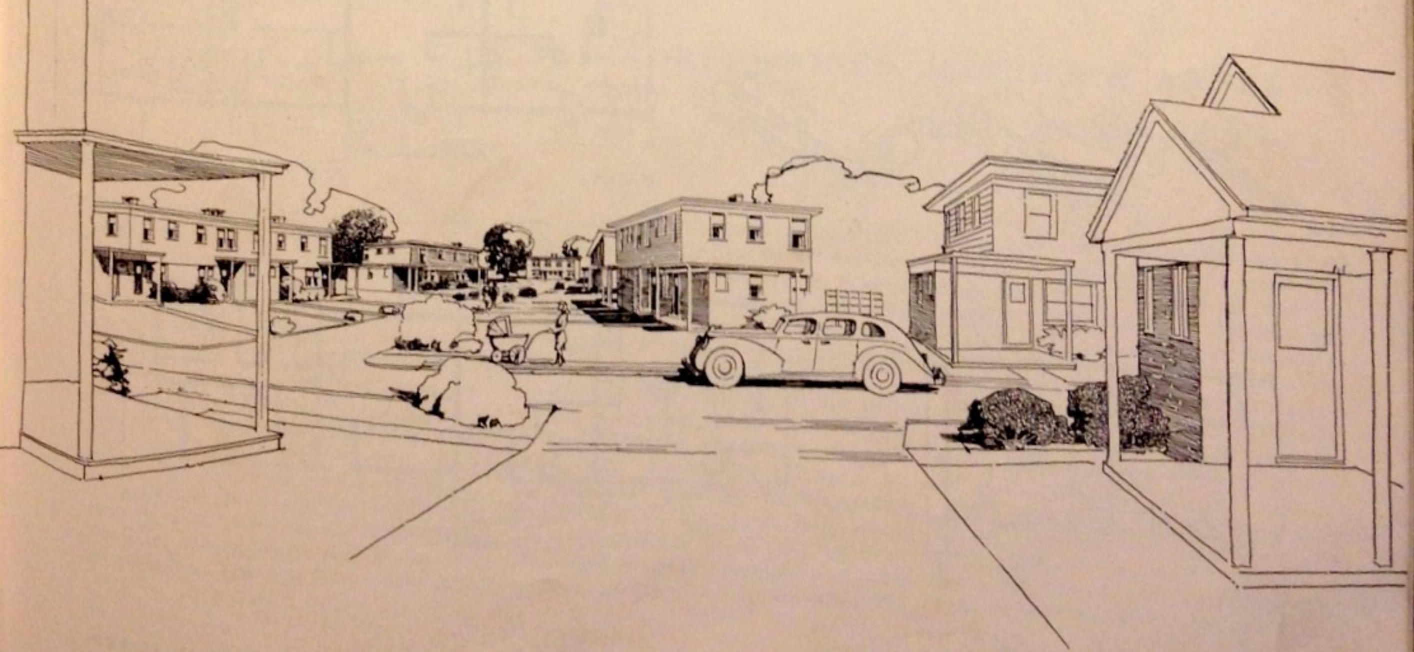
"To these requirements we added a number of our own. We tried to arrange living rooms to eliminate through circulation to bedrooms. It was also considered desirable to provide a number of central front entrances to the houses. Porches, related to the front entrance and the yard, were put in wherever possible. Several of the ways in which these porches were used can be seen in the illustration below."



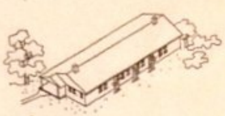
A number of simple amenities were incorporated in the common areas by the architects. A typical example is the children's theater, an open platform with a back wall and two wing walls, located at the edge of the woods. Behind the back wall is picnic fireplace.



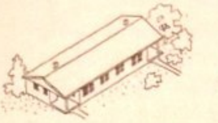
An important feature of the plan was the arrangement of private parking stubs in relation to the houses and drying yards. The inconspicuous but convenient placing of the drying yards is excellent. For additional comments on this feature see pages 43 and 44.



VIEW 3. OF PLAN ON PAGE 42



A.



B.

C.

D.

UNIT PLANS

A. One-story, two-bedroom twin. Main entrance from porch, which is related to the rear yard. Utility room adjoins side (laundry) yard. Front plumbing stack connected to utility mains in street.

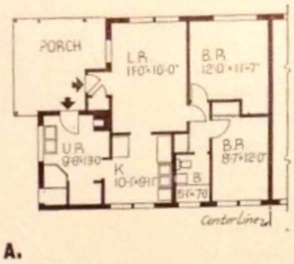
B. One-story, two-bedroom twin. Front main entrance. Rear plumbing stack connected to rear utility lines.

C. Two-story, three-bedroom twin. Access to bedrooms without passing through living room. Shelter over corner entrance. Rear plumbing stack to rear utilities.

D. Two-story, three-bedroom twin. Center front entrance. Access to bedrooms without passing through living room. Rear plumbing to rear utilities.

E. & F. Two-story, rows. Rear living room, front entrance hall and front kitchen. Front service only in center of units. Smaller families in center of row. End units are also used as twins (not illustrated).

G. One-story, one-bedroom row. One-bedroom units occur only in this type.



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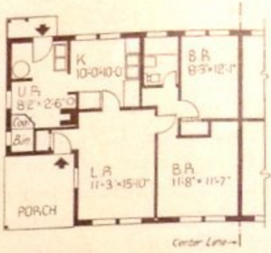

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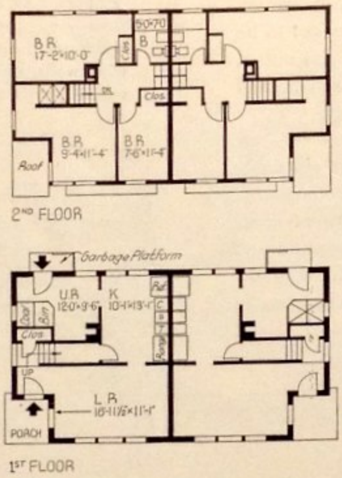

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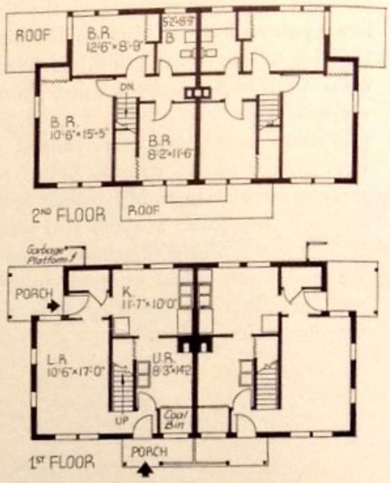

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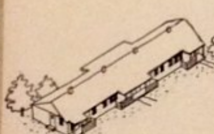

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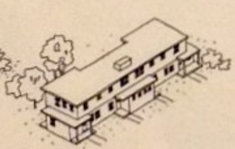
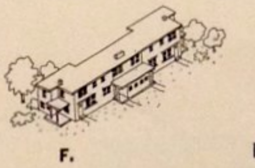


E.



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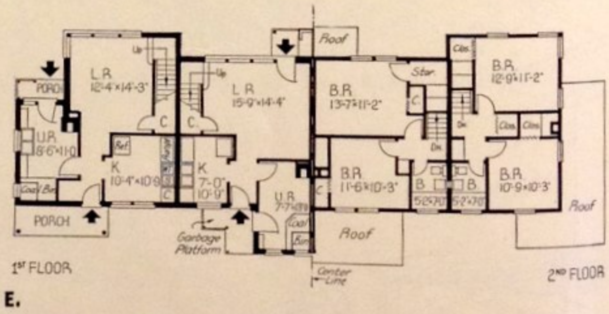

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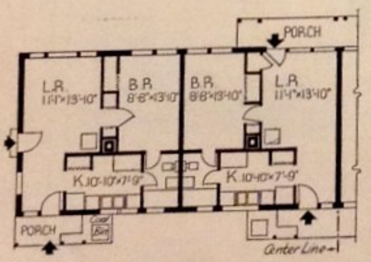

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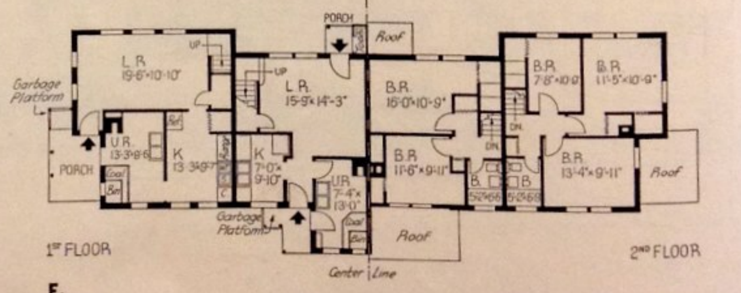
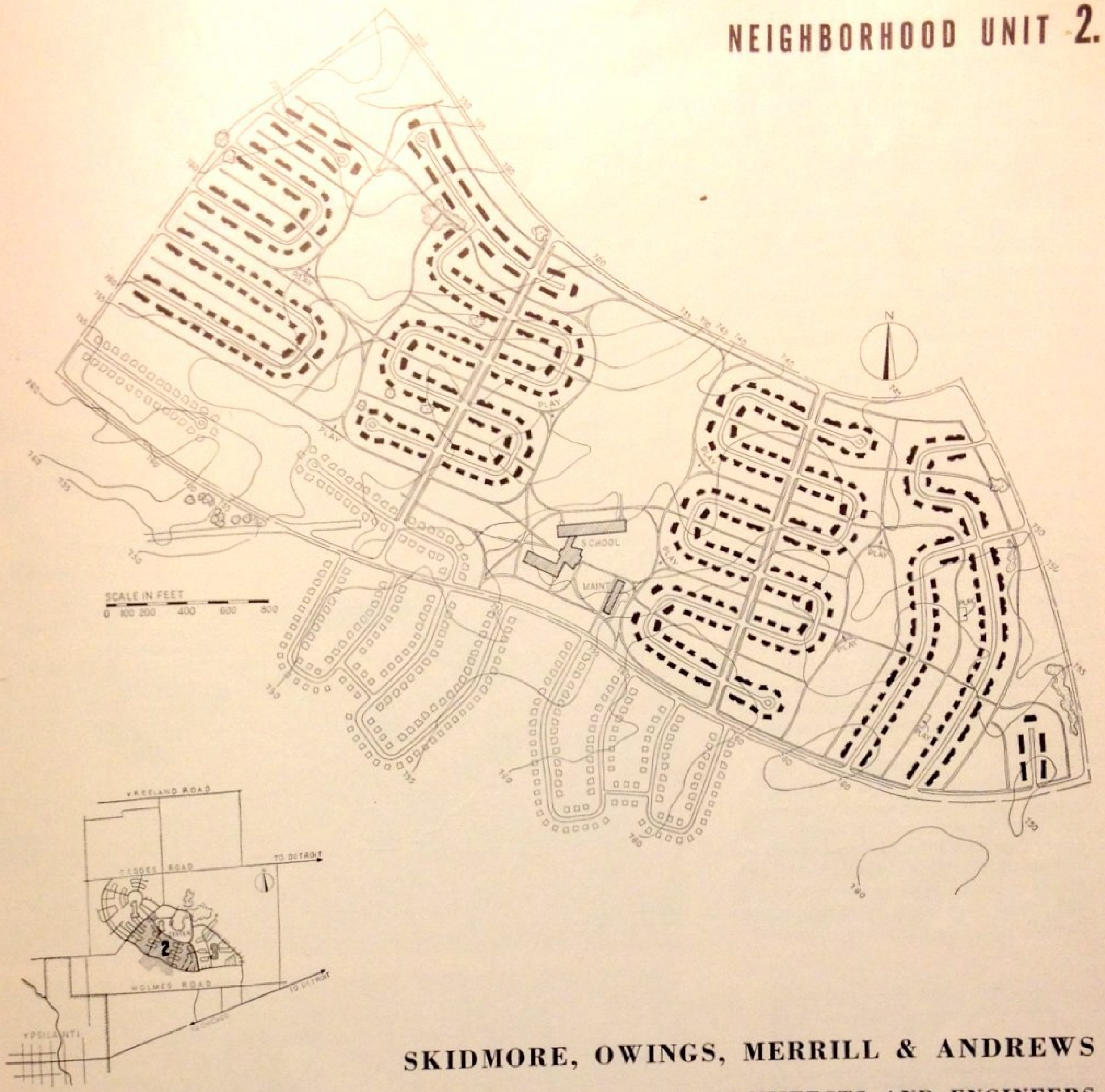


F.

NEIGHBORHOOD UNIT 2.



SKIDMORE, OWINGS, MERRILL & ANDREWS

ARCHITECTS AND ENGINEERS

"Our office was assigned the central lower neighborhood area, with Stonorov and Kahn's group on the east and Mayer and Whittlesey's project on the west. The town center lay to the north and there was a circumferential boulevard on the south. The fixed area which was allotted to us was larger than was absolutely necessary for the required 1,200 units, and it consequently permitted the development of a very open site plan.

"Our program, like that of the other architects, allowed ten percent for one-bedroom units in rows, 60 percent for two-bedroom dwellings in twin houses and singles, and 30 percent to be single houses only, with three bedrooms. The site layout was controlled to a certain extent by the existing contours, but since the project was to have been a permanent development, we considered additional expenditures for grading justified in certain cases in order to produce a more consistent site layout.

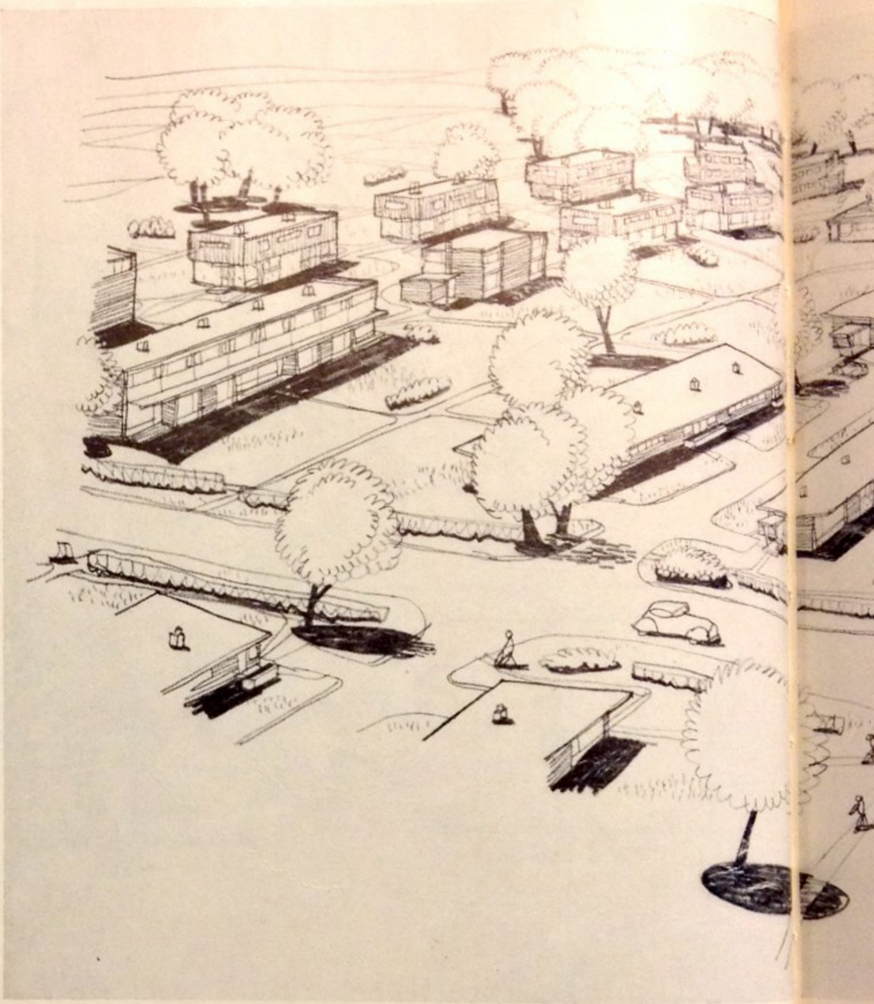
"The fundamental approach to the problem was to keep our scheme as broad and simple as possible. We felt that the cul-de-sac, in a development of this scale, should be used sparingly. We felt equally strongly that the continuous loop, which was used principally throughout, has many advantages from the standpoint of convenience to the families living in the homes, and also from the service angle (mail, coal, milk, etc.). The reason for these advantages, obviously, is that the continuous loop eliminates the dead end which is the fundamental characteristic of a cul-de-sac. At the same time, the relatively short loops with their sharp curves tend to eliminate the dangers of fast-moving traffic; in consequence the safety features inherent in the cul-de-sac type of solution are retained.

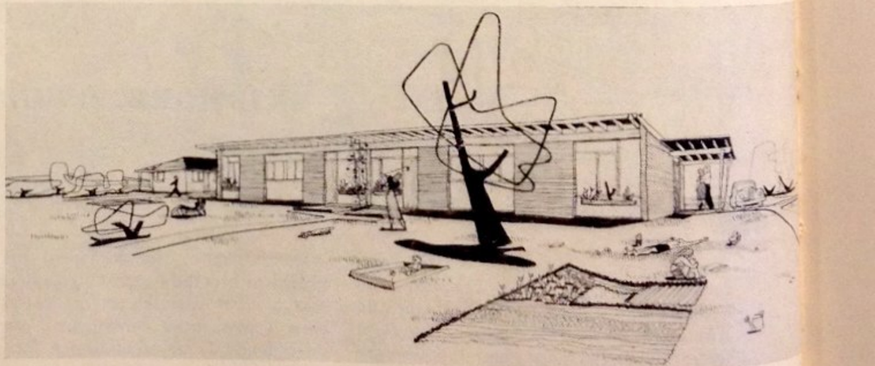
"There was much discussion among the five groups of architects about the orientation of the dwelling units in relation to convenient service; with ample land available we went all out for the principle of facing the service side of the house to the street, with the living side opening on the common garden or park area. The question of the unsightliness of laundry, etc., was argued pro and con, but we felt that at the worst the laundry was much less objectionable if located on the service street side than if it were placed in the common park.

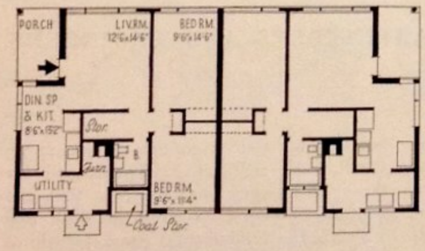
"Our basic scheme made use of the county highway which borders the site on the west as a collector street, with the two boulevards used for the same purpose. No houses were placed on these collector streets since it was believed that both pedestrians and motorists would receive a more favorable impression of the development if the vistas were clear, extending down through the garden areas. The problem of children—keeping them off the streets and putting a minimum number of traffic roads between their houses and the school—was accomplished by placing the proposed school in the center of the group, as shown on the site plan. In this way a child would not cross more than one collector road, and this could take place at some control point with a signal light.

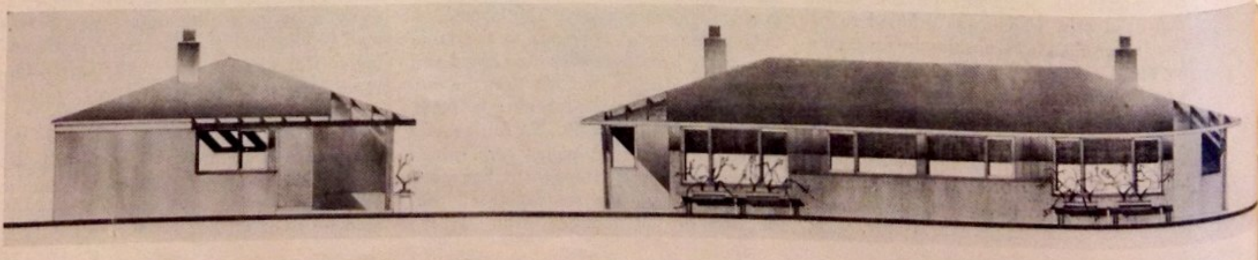
"There was no necessity of varying the continuous loop pattern to a great extent, since one section of the loop is, in a sense, a community by itself. It was felt that variations in the designs for the individual units and their location in relation to the service drives would offset any possibility of monotony.

"The allowance for landscaping, under a permanent setup, was at a minimum; in general, our approach was to make use of the largest specimens we could afford rather than spend the allowance on shrubs and small plants. We also selected and placed plant material to create a casual and intimate rather than formal atmosphere."

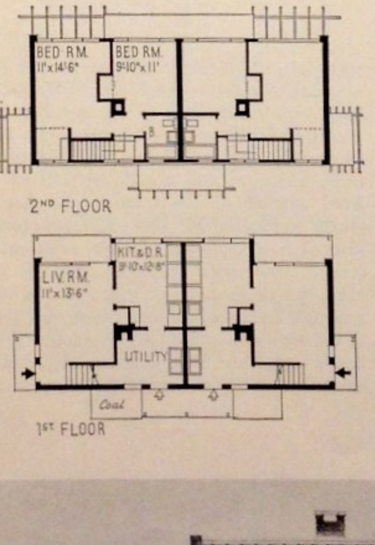


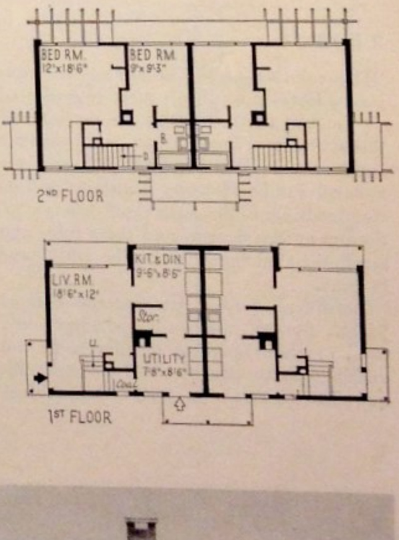


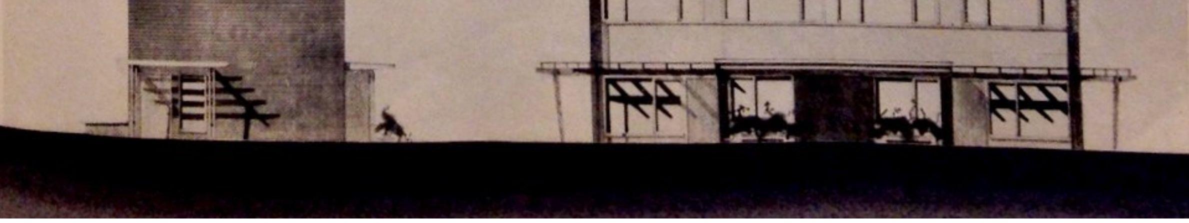




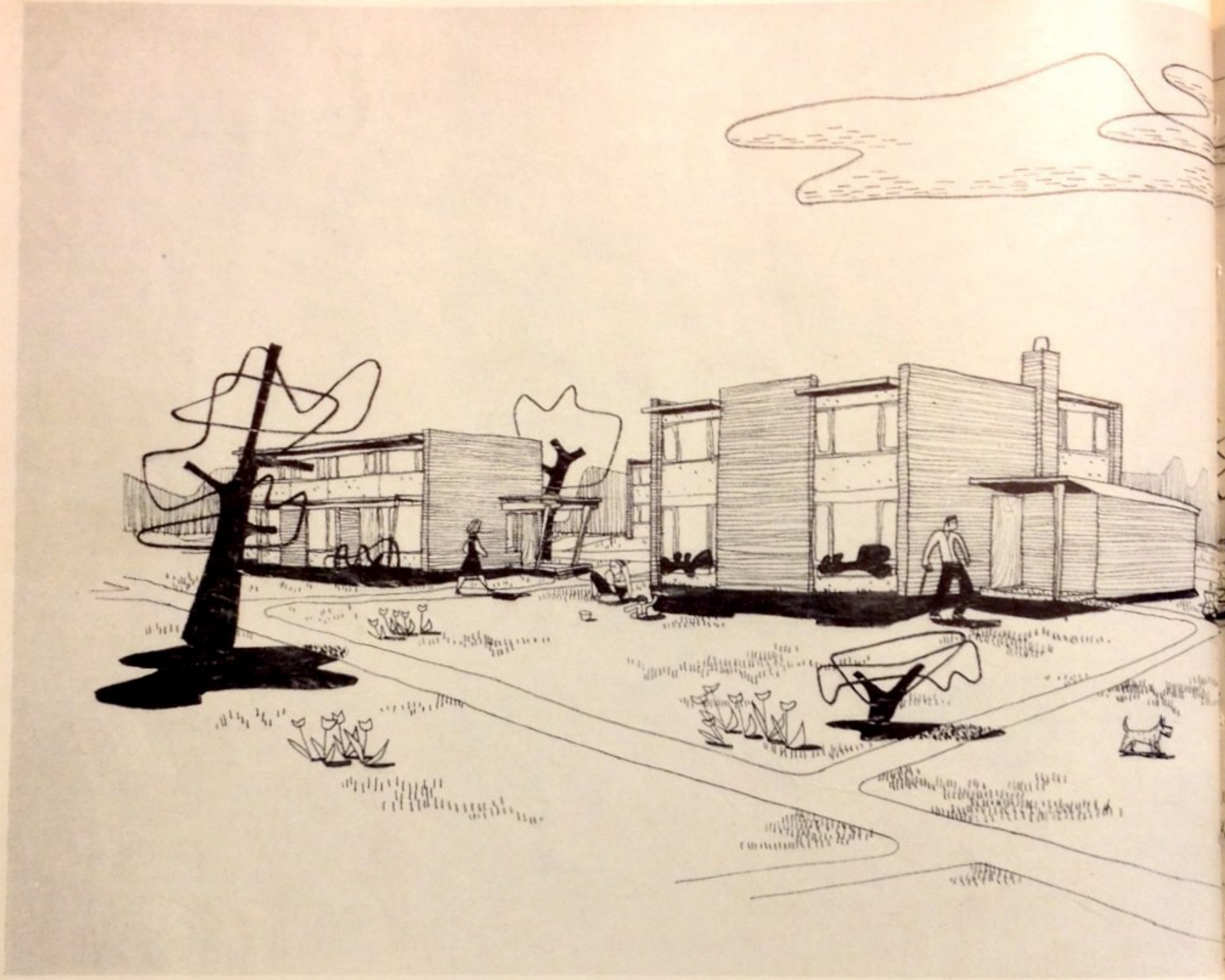
Three of the two-bedroom schemes are shown here. On the facing page is a one-story twin house with access to the bedrooms from a small vestibule off the living room. Coal is kept in an outside bin, recessed within the main mass of the house, and placed directly adjoining the service door. Note that both the living room and the larger bedroom overlook the rear garden space, and that even the dining space in the kitchen has a view through the corner window. The two schemes at the right vary only in nonessentials. In both the utility room is used as a service passage to the kitchen, which has been placed to face the rear.



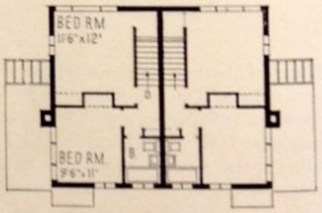




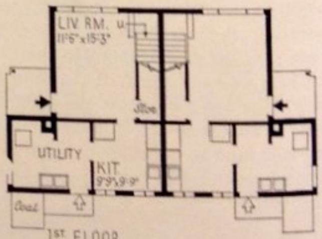
TOWN OF WILLOW RUN: NEIGHBORHOOD UNIT 2.



UNITS



2ND FLOOR

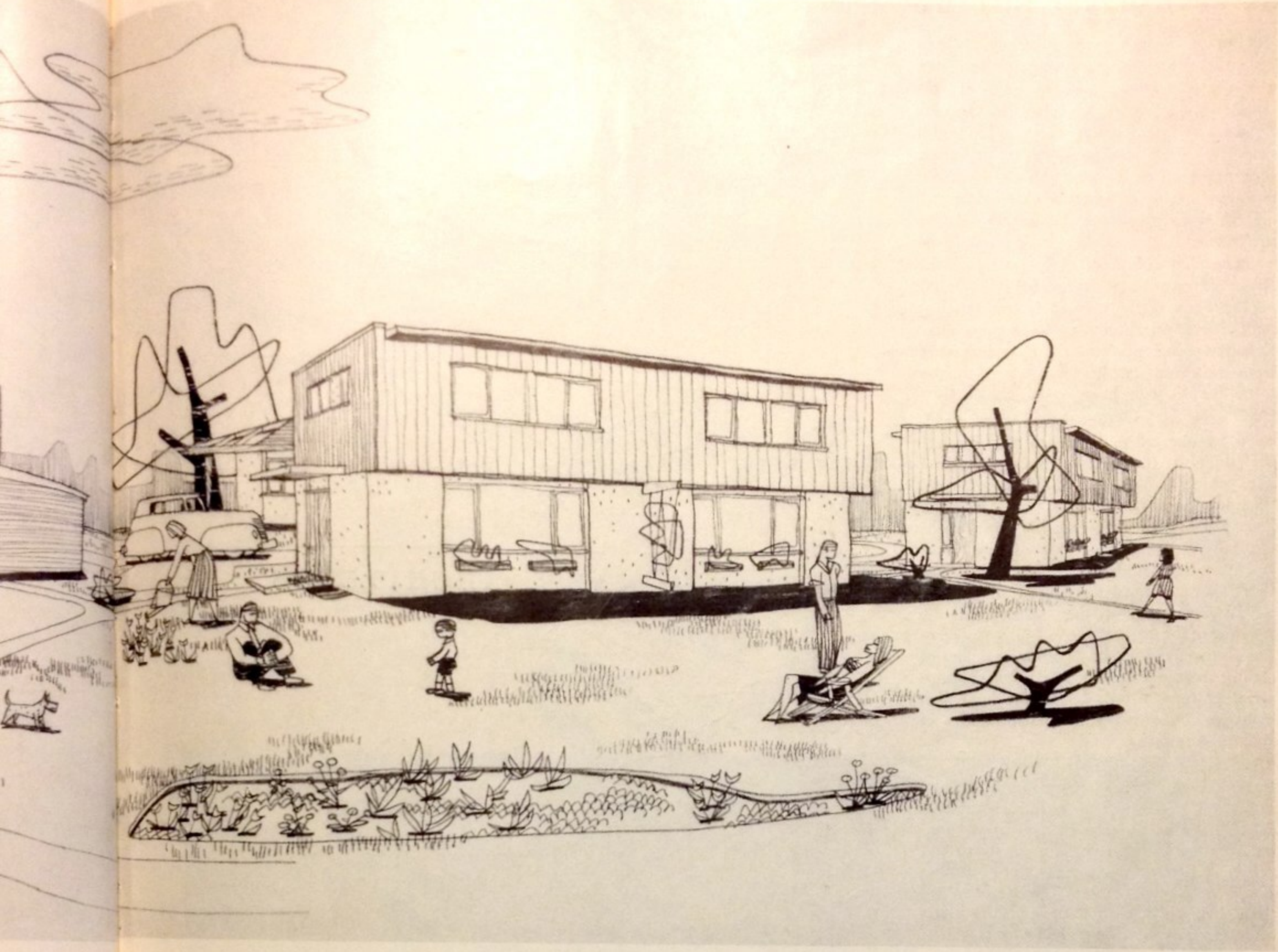


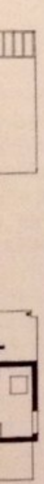
1ST FLOOR

"The solution of the design of the units was a long and difficult task, complicated by the fact that, although the project was theoretically a permanent one, agencies such as the War Production Board, the Federal Public Housing Authority and its standards, and the C.I.O. all had an influence on the design, and their rules and regulations changed radically from time to time.

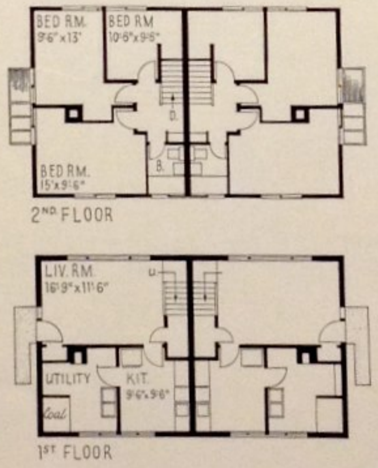
"There was a fixed top average cost of $4,200 for all the units, whether one-, two-, or three-bedroom dwellings. In the middle of the design work we were required to change from wood to less critical materials, which meant the introduction of masonry, Cemesto board, etc. We had fixed requirements as to the number of pieces of furniture for each room; for instance, the master bedroom required twin beds, a dresser and a crib, as well as a fixed amount of closet space. No basements were allowed: this required provision of a utility room, laundry and coal storage space in a minimum area.

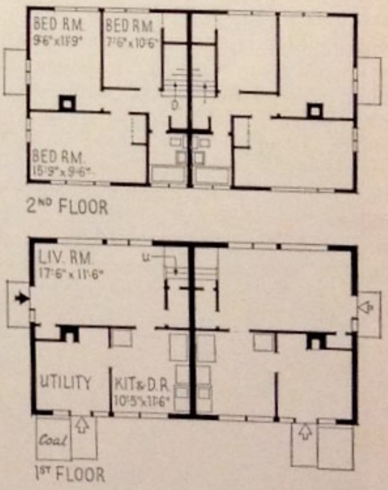
"In general, an attempt was made to locate the living room and dining section of the kitchen so that they faced the garden areas; very little exterior embellishment was possible. Porches, for instance,

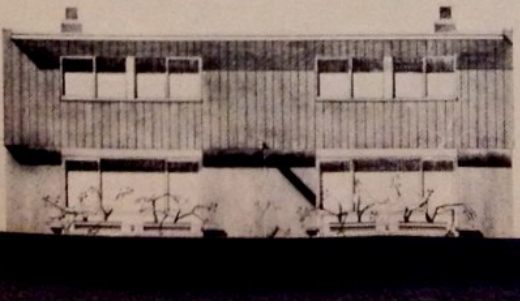


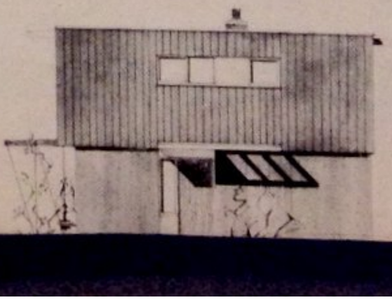


were not within the limits of the budget. The houses were designed so that carports or garages could be added at a later date. "The ideas of the five architects on the units were frequently pooled after each firm had arrived at its own solutions independently. This procedure tended to assure the future tenants a generally high standard as far as room arrangement was concerned. Over and above these collaborative efforts, however, there remained a considerable amount of individual character in each of the five neighborhood projects."









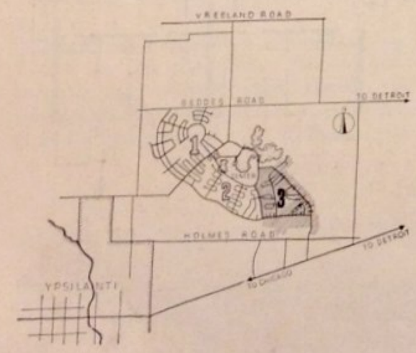
NEIGHBORHOOD UNIT 3.

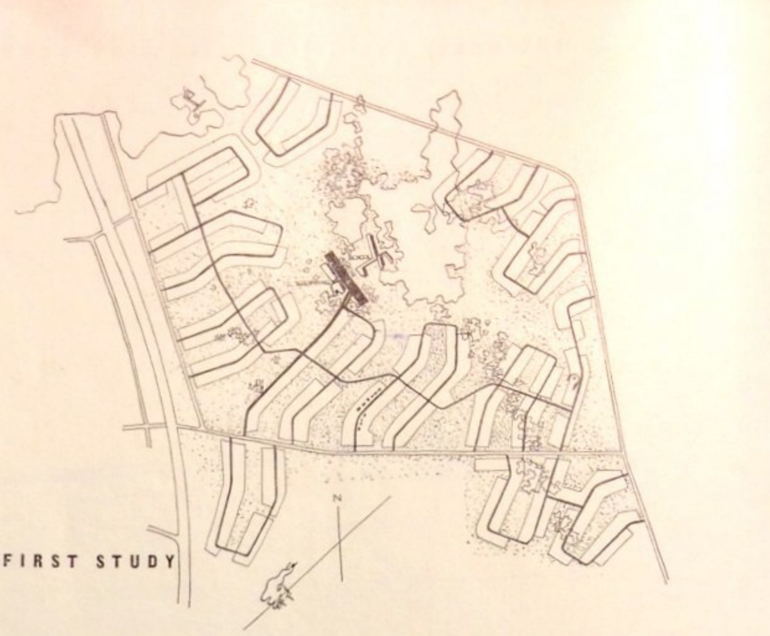
"There were no preconceived notions about Willow Run housing other than a definite desire upon the part of the workers' committee to have the houses oriented informally to the garden side, thus reversing completely the orthodox idea of living on a street. This stipulation was the source of considerable argument among the Government planners and the architects. The workers' education in housing had led them to feel strongly in favor of super-blocks up to 80 or 100 acres. A few of the very early solutions reflect this desire. A later compromise solution destroyed much of the character that such solutions might have given to the town, had it ever been built.

"To fully understand the scheme developed by our office, one should appreciate the difficult conditions imposed by the site, which is bordered by low land and the main access road, and forms, more or less, a drainage basin for the entire town with three definite streams of flow. Vast apple orchards cover a large area and there is a magnificent stand of timber. These factors, and the location of the neighborhood center to the south (to serve the future enlarged community) had a strong influence on the final plan. From a strict pattern of culs-de-sac, the final plan evolved, containing various expressions of living habits.

"A good many of the houses are of the 'ground-freed' type (living on the second floor, utility and garage spaces on the first floor) offering a pattern which is economical for grading, road construction and utilities. A major advantage is that it is possible to pass under the house rather than through it, so that the upstairs living quarters may be oriented in any way that seem desirable.

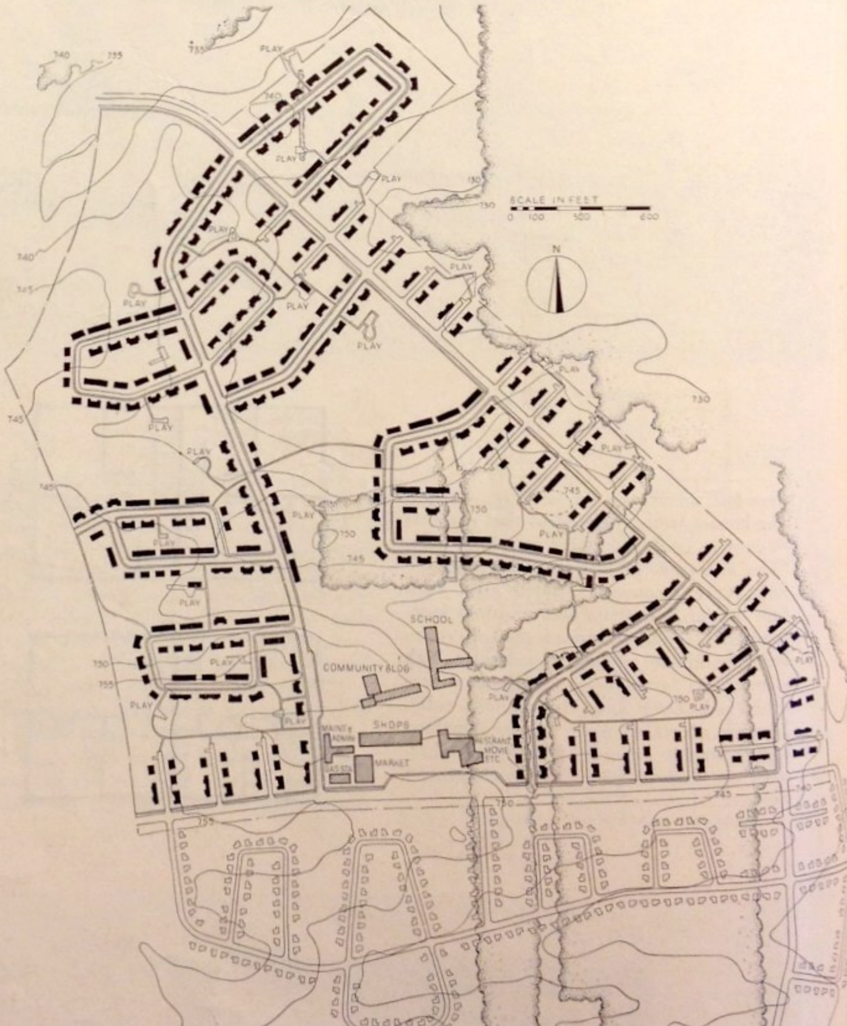
"We believe that the town of Willow Run, taken as a whole, illustrated planning principles which are sound, and which will be valid for postwar work. Treatment of the neighborhood as a unit, determined by an elementary school, a nursery unit and a small shopping center, is an advanced and reasonable conception. The character of the town is neither urban nor suburban; its safety, spaciousness and convenience would have offered a powerful inducement to permanent settlement."

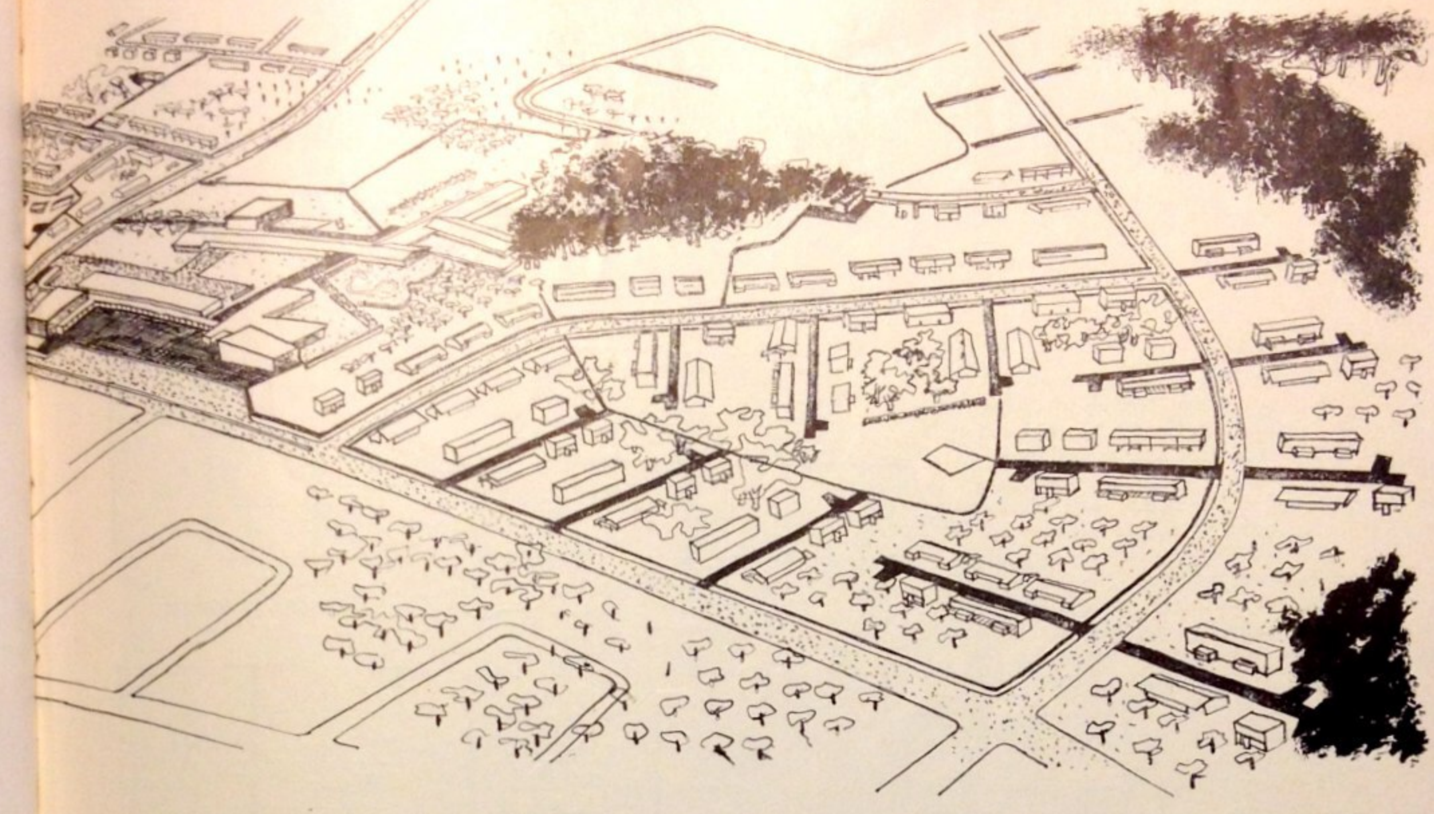


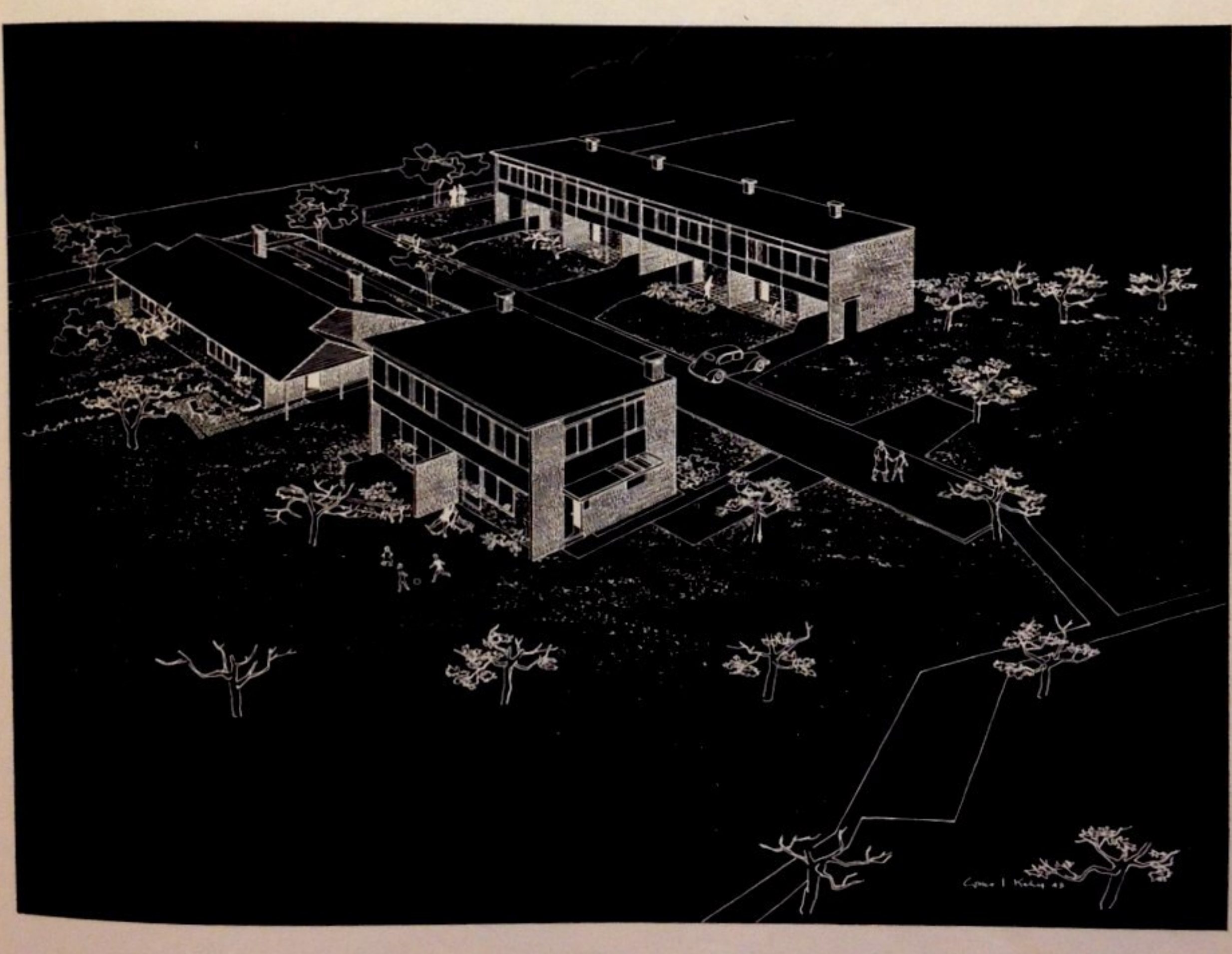


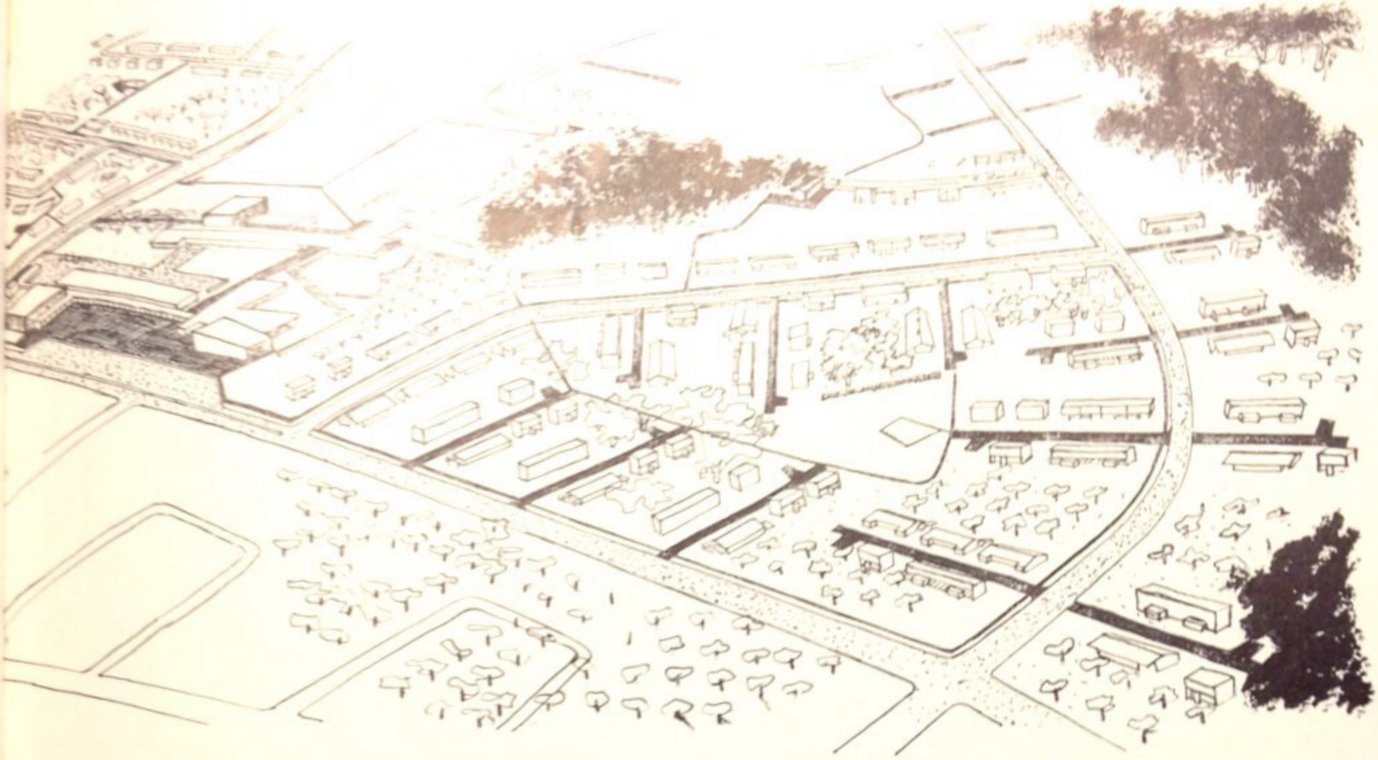
FIRST STUDY

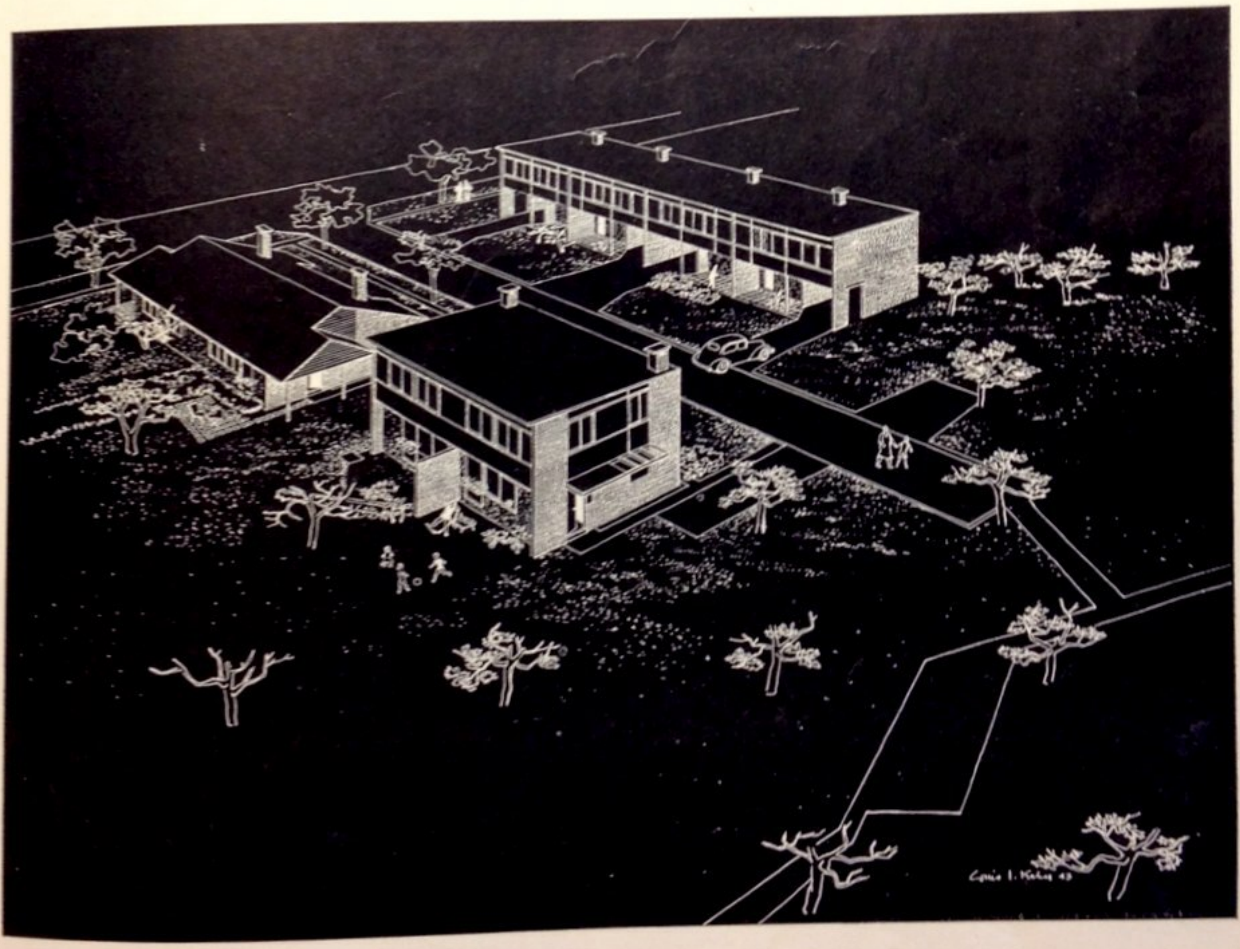
STONOROV & KAHN, ARCHITECTS

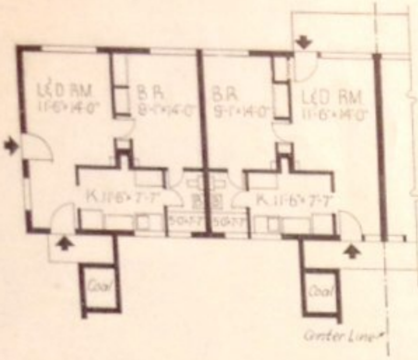


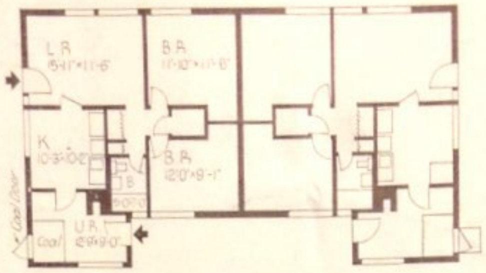


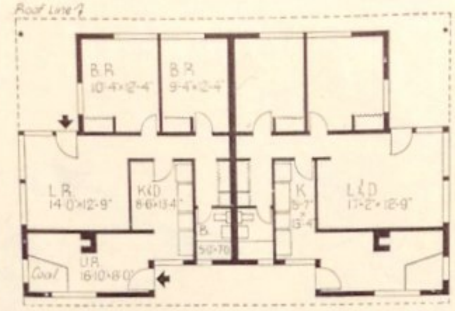


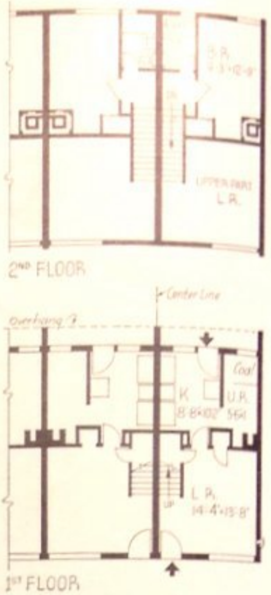



Louis I. Kahn 43



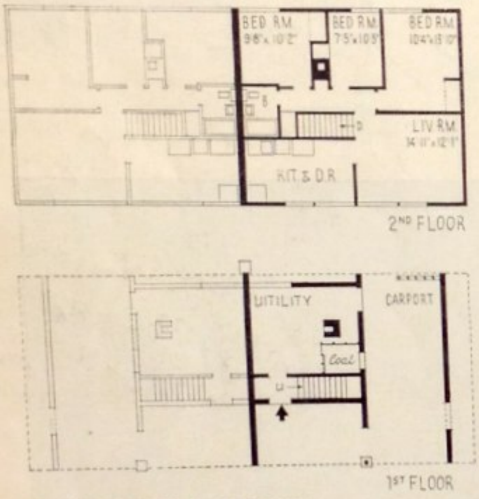




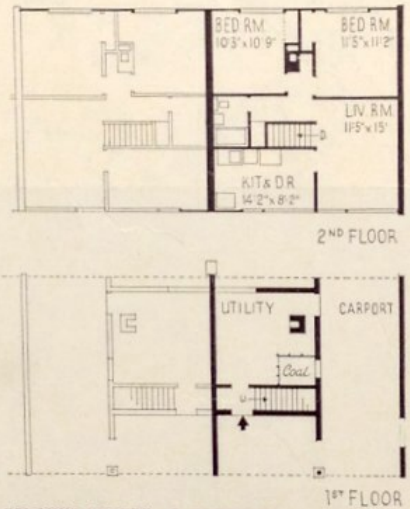


2 STORY—1 BEDROOM

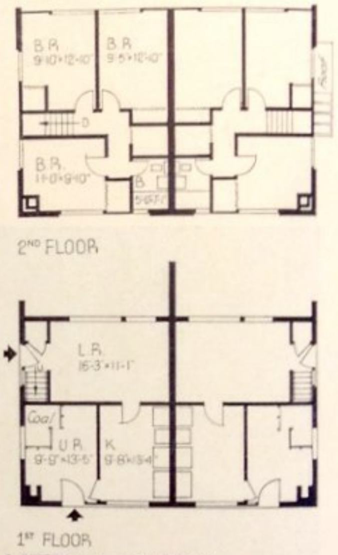
Most unusual of all house types in the entire town was the "ground-freed" house, illustrated here in two sets of plans and a perspective sketch. The ground floor, as shown, contains only an open carport, stairs and large utility room. Upstairs, except for the stairs, is a one-story house plan, provided in this instance with either two or three bedrooms. The other plans, for twin or row houses, show a much less radical departure from the units commonly accepted.



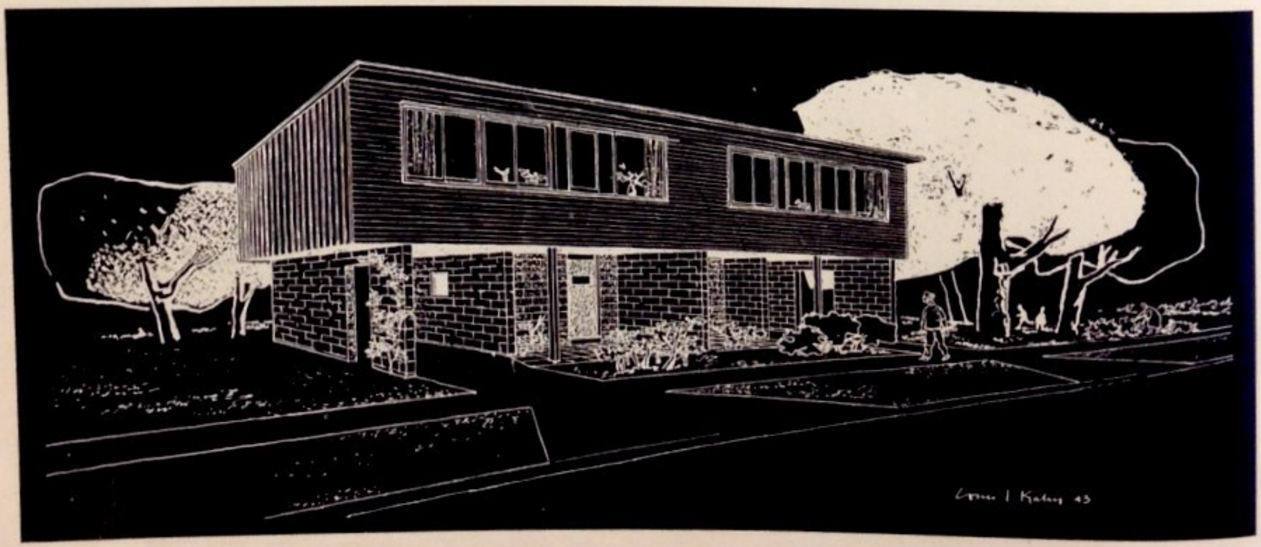
"GROUND-FREED"—3 BEDROOMS



"GROUND-FREED"—2 BEDROOMS



2-STORY—3 BEDROOMS



ARCHITECTURAL FORUM

MARCH 1943

NEWS 33

Title VI progress rapid . . . Walter Nash addresses A.I.P. and Citizens' Housing Committee . . . Coffee resolution on Tax Integration . . . WPB construction stoppages . . . Rent control developments . . . John Howes Burton, planner . . . First "E" award to architects . . . Renegotiation of contracts . . . Philip Hauser forecast . . . Purchase of hotels by the Army . . . War housing standards loosened . . . Conversion program creeps along . . . AA-3 preference rating for remodeling by private builders.

WILLOW RUN 37

Plans and perspective drawings of "Bomber City," showing what might have been the first U. S. city planned for the 20th century.

WELFARE BUILDING 55

The Great Lakes Naval Training Station adds another outstanding contemporary building to its distinguished collection.

HOUSES 61

More case histories in the small house series . . . interior-exterior photographs . . . floor plans . . . critical comment . . . cost data . . . construction outlines.

THE PREFABRICATED HOUSE IV 71

Steel — prominent in early experiments. Evolutionary trends . . . steel frame houses . . . steel frame panels . . . pan-, or frameless-steel . . . steel mobile houses.

RAILROAD STATIONS 83

Modern architecture makes its bow on the Pennsylvania Railroad: two small new stations at Edgewood, Md. and Ridley Park, Pa.

FORUM OF EVENTS 2

The "Arts in Therapy" exhibition . . . Bernhard's shell photographs . . . Announcements . . . Obituaries.

BUILDING REPORTER 10

BOOKS 22

Plastics Catalog, 1943 . . . A planner surveys New York's past and future.

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Robert Hanford
Joseph C. Hazen, Jr.
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